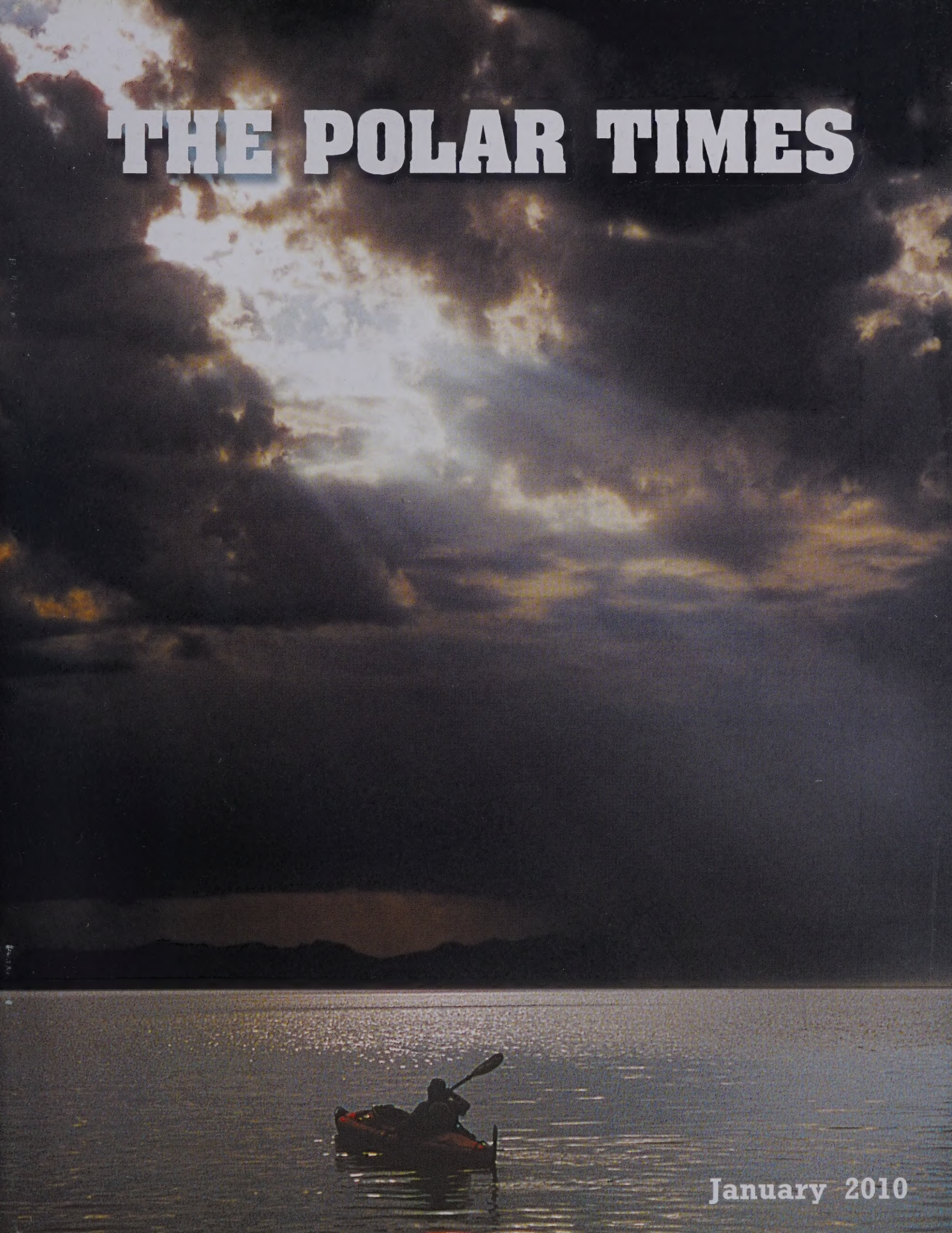
THE POLAR TIMES



January 2010

President's Letter

I attended the Antarctic Treaty Summit in Washington, D.C. from Nov. 30–Dec. 3, 2009. This celebration of the development and resilience of the Antarctic Treaty on the 50th anniversary of its signature, in the city where it was signed, was attended by about a hundred men and women active in Antarctic Treaty affairs over the years. The meeting was held in the National Museum of Natural History and was chaired by Professor Paul Berkman. For three days, plenary presentations and panel discussions by speakers from 16 countries brought together diplomats, international lawyers, scientists, historians, environmental activists and Antarctic tour operators—most with years of experience at Antarctic Treaty consultative meetings. Among these were R. Tucker Scully, who chaired the 50th Antarctic Treaty Consultative Meeting in 2009, and Susan Solomon, Co-Chair of the IPCC Scientific Working Group for the 2007 Report on Global Warming.

Two veterans of the International Geophysical Year (IGY), Yoshio Yoshida, (Japan) and John Behrendt, (US), were in attendance together with a veteran of the 1949-52 Norwegian-British-Swedish Antarctic Expedition, Fred Roots (Canada), all of whom provided perspectives on the changes in Antarctic science and other activities since these early years at the end of the heroic age and the start of the scientific age. These men and others noted that the Cold War and associated tensions dominated the IGY expeditions, particularly the placement of research stations by USSR and US, both of whom made no territorial claims; US and Russia still maintain their basis for future claims. Deaths due to accidents in the air and over the snow, from 1955-1964, were more than an order of magnitude higher rate from 1955-1964 than at present, partly because of this international competition.

The only major field programs in the IGY period were extensive oversnow traverses to define the Antarctic Ice Sheet and its thickness, primarily carried out by US and USSR teams. I gave a presentation on this major effort, which included geographic exploration, as much of Antarctica had not even been seen from the air in 1956. The results of this field effort were a first approximation of the ice sheet elevation, bed topography, snow accumulation and mean annual temperature. Geologic and topographic mapping were not included in the IGY because of the territorial claims issue prior to the Antarctic Treaty. However, geologic reconnaissance was done when mountains and nunataks were encountered by the oversnow traverses, as most geophysicists and glaciologists had geologic training.

One of the high points of the Antarctic Treaty Summit was the signing of the "Forever" Declaration on December 1, the 50th anniversary date of the signing of the Antarctic Treaty. This two page document noted that "Antarctica shall be used for peaceful purposes only ... that the environmental principles and mechanisms developed for the protection of Antarctica and associated ... ecosystems have inspired the development of international law, ... and that continued scientific research in Antarctica and the effective dissemination of its results are vital to understanding of the Earth's systems especially in relation to climate change." The Antarctic Treaty Summit "believes that the pristine nature of Antarctica ... will provide inspiration to present and future generations ... supports ... scientific research ... and encourages all States to draw on the lessons learned from the Antarctic experience in creating effective governance systems for spaces beyond national jurisdictions." The "Forever" Declaration "shall be "distributed widely and shall be communicated ... to the General Assembly of the United Nations, ... and the governments of all States Parties to the Antarctic Treaty." ❑

John C. Behrendt

President, APS

Treasurer's Letter

Last summer you received a letter from APS President John Behrendt, inviting you to make a special contribution to the Society. The response was remarkable, with over $16,500 contributed. Gifts ranged from $20 to $1,000. Heartfelt thanks to those of you who responded so generously!

For those who did not made a contribution, I encourage you to make one today. The American Polar Society is a 501(3)(c) organization, and gifts are tax deductible.

Please send your donation to the Society today. Checks should be mailed to the address at right.

In the coming year we will celebrate the 75th Birthday of the *The Polar Times*! As part of this celebration we will publish an anniversary issue that will recognize many of the events that have been chronicled by *The Polar Times* over the last seven and a half decades. Your gifts and membership in the Society enable us to undertake this special project. All active members in the Society will receive this special edition and be eligible for a special gift rate.

With warmest regards,

Dave Baker
APS Treasurer

Dave Baker, Treasurer
American Polar Society
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About Our Front Cover

Author Scott Hoffman paddling after a breaking storm on Lake Baikal. ❑ **Photo by Michelle Kirkhoff**

American Polar Society

The American Polar Society was founded Nov. 29, 1934, to band together all persons interested in polar exploration. Regular membership dues are $25 a year ($35, foreign) and entitle members to receive ***The Polar Times*** twice a year. The American Polar Society is classified as a tax exempt organization under Sec 501(C)3 of the IRS Code. For more information about the American Polar Society, contact Kevin L. Bjella, ***APS Secretary***, at 1.802.295.6881 or send email to kevin.bjella@erdc.usace.army.mil.

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...of Nerpas and Siberia's Great Inland Sea

by Scott Hoffman

The *Natalia* was a faded blue, toy ship piloted by a scowling and suspicious Russian captain, Evgeny, who seemed better suited for a 1940s B-movie than the man we were going to entrust our lives to as he ferried us hundreds of miles north through the often unforgiving waters of Siberia's Lake Baikal. Evgeny and his son and first mate, Igor, loaded our gear and two kayaks (which placed end to end were longer than the *Natalia*) and, with not a word of English between them, motioned us to make ourselves comfortable as best we could; our two-day voyage to the remote northern shore of the lake would begin at 4:30 the next morning.

Our goal, four of us who'd been kayaking together for several years, was to paddle as much as we could in and around the ancient "Pearl of Siberia," Lake Baikal.

Our boats of choice were folding kayaks—sturdy, well-tested vessels stretching 18 feet long and capable of holding better than 700 pounds of cargo and paddlers, yet able to be broken down and packed into bags easily checked as luggage on any airline. Over the years, these folding kayaks have allowed us to travel "under the radar" and into otherwise inaccessible regions of the world including Alaska, Mexico, Thailand and China, and were a perfect choice for exploring such a wonder as Lake Baikal.

Located in South Central Siberia, Baikal is a 400-mile-long rift lake, where the Earth's crust is pulling apart beneath the lake's surface, preventing it from filling with sediment and evaporating, as most great lakes do in a matter of a hundred thousand years or less. Lake Baikal is the oldest lake on the planet, estimated at 25 million years. It is also the deepest lake, at over a mile in some places (with over five miles of sediment!), holding roughly a fifth of the Earth's fresh water. It is home to over a thousand species of plant life and nearly 1600 species of animal life—80% of which is endemic to this closed system "Galapagos" of the Siberian Boreal Forest and Northern Mongolian Steppe.

Along with musk deer, badger and brown bear, myriad bird life, the fabled sable and a rich spectrum of aquatic life, Baikal is home to the only example of freshwater seal in the world. The Nerpa seal (*pusa siberica*) is a small, pudgy and earless pinniped whose oversized, deep black eyes give it an almost alien appearance. Its "alien" presence in Lake Baikal is still a scientific mystery, as its closest related species is the Arctic Ringed Seal which inhabits the Bering Sea, hundreds of miles to the north. We hoped to be lucky enough to catch a glimpse of a Nerpa seal before our month in the area passed.

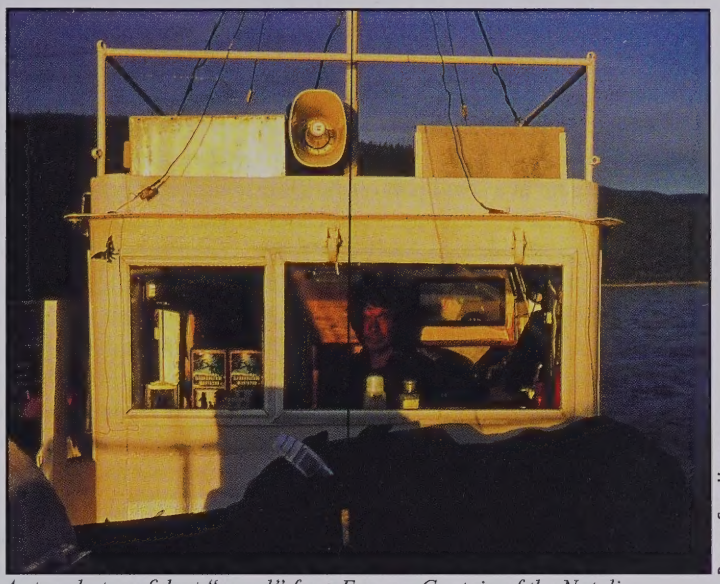


Photo by Scott Hoffman

A stern but confident "scowl" from Evgeny, Captain of the Natalia

We arrived near Lake Baikal via South Korea, following a three-day passage on the Trans Siberian Railway from the sprawling river city of Khabarovsk in East Siberia to Ulan Ude. Our bundled boats and gear were bulky but manageable, once hauled aboard the great train that makes its way over 5,000 miles across the expanse of Siberia to Moscow. Cloistered in our sleeper compartment, we were gently exposed to Siberia and Russian culture as the great train chugged westward. More often than not, our neighbors in adjoining compartments would send their children to evaluate the exotic westerners before making contact themselves. But within a day, we had made many friends aboard the train and were bartering for snacks with local vendors at small towns and stops along the way.

> *Our goal ... was to paddle as much as we could in and around the ancient "Pearl of Siberia," Lake Baikal.*

We reached the city of Ulan Ude in the early morning. Opened to foreigners since 1991, Ulan Ude has retained a strong cultural bias toward the Mongolian and Buriat influences to its south. Almost as a counter gesture to this disposition, the Soviets erected in the city center what is the largest head of Vladimir Lenin ever built. Our host was Andrei Suknov, a local ecotourism organizer, fellow kayaker and part of a group working to develop the Great Baikal Trail, an ambitious project that will eventually create a trail system that will circle the lake's 1,300 miles of shoreline and be augmented with hundreds of miles of spur trails.

Andrei teamed us up with his young son Yasha and a local Buriat guide named Chimit. We toured the great open plains near the Mongolia border, visiting richly decorated communities and battlefields of the great warlord Ghenghis Khan, whose exploits are legendary in the region.

Andrei also owns a folding Kayak and, for the next three days, our group, along with Chimit and Yasha, explored Baikal's largest tributary, the Selenga River—a sprawling, fast-moving river passing through countryside that is reminiscent of America's Great Plains. Our first day of paddling was tedious in the face of the unrelenting Sarma winds blowing at us from the northwest. The Sarma winds, sometimes reaching to 90mph and rising with little warning, were one of our biggest concerns for when we would reach the open lake. The steady push of the wind neutralized the strong current of the Selenga pushing us downstream. But after 12 hours of hard paddling, we had traveled about 40 miles and made camp on a sunlit bank above the water.

The days spent paddling on the Selenga river were a good introduction to the region,

(Continued on p 4)

its weather and people. After pulling our boats from the river on a sandy spit south of Ulan Ude, we packed them up and headed to the great lake. After a short stay in Ust Barguzin, a small settlement in a lush valley at the mouth of the Barguzin River, we resupplied and arranged for a small ship, the *Natalia*, to ferry us to the northern corner of the lake, where we would begin our exploration of Lake Baikal.

We pulled out of a small port on the Holy Nose peninsula at 4:30 a.m. for a two-and-a-half-day chug to the northern reaches of Lake Baikal. Evgeny charted a zig-zag course for the ship, lest he be taken by surprise by a sudden Sarma windstorm. Barely making 10 miles per hour even on calm, glassy waters, the *Natalia* finally deposited our small expedition on an isolated and buggy beach on the northeast shore of the Baikal. We arranged to meet again in 12 days at Davsha, a scientific outpost 150 miles to the south.

The weather and winds were in our favor for much of our paddle. And although great thunderstorms would brew up in the high mountains above the Brown Bear Coast on the west side of the lake, they literally took hours to reach us with violent rains, wind and lightning, so we always had plenty of time to respond to the impending storms and were hunkered down long before their arrival.

After a few days on the water, we crossed into the Barguzinsky Nature Reserve, established in 1916 to protect the Barguzin Sable, nearly trapped into extinction in the 19th and early 20th centuries.

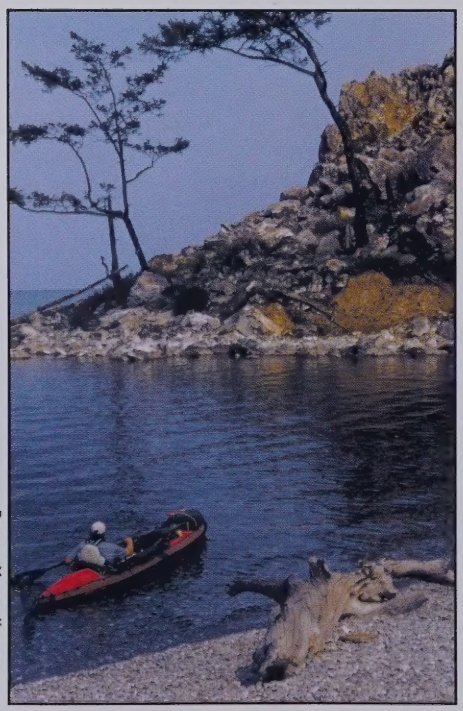
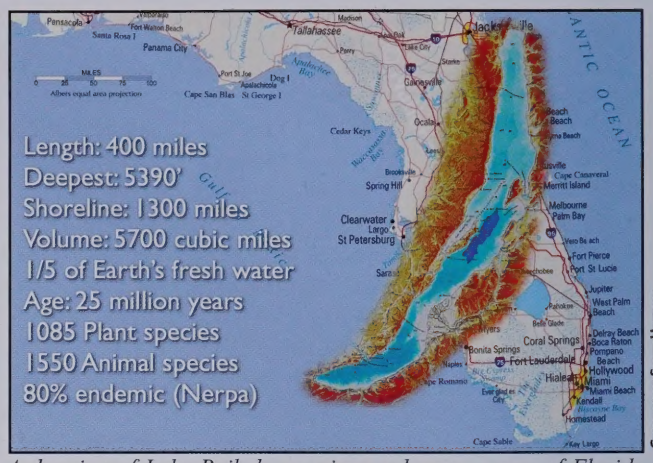


PHOTO BY MICHELLE KIRKHOFF

Hoffman in a small inlet on Olkon Island

Early one morning, we paddled past a warden's outpost in the reserve. Landlocked and isolated on this roadless stretch of coast, transportation is available to the park personnel only via water and over the thick ice which settles in on the lake in late December and doesn't break up until May. Locals use stocky trucks and land cruisers to navigate the lake ice in the middle of winter, travelling hundreds of miles over the icepack with little concern.



COURTESY OF SCOTT HOFFMAN

A drawing of Lake Baikal, superimposed upon a map of Florida, illustrates the immense size of this wilderness body of water.

The Barguzinsky Warden was not pleased to see our party. He jogged down to the shore, brandishing a pistol, screaming in Russian for us to go back. "Niet!! Niet!!" (No! No!) was about all we could translate before we reluctantly paddled into shore to see what the problem was.

It seems that in Russia, "preserves" are considered such in the purest sense of the word, and human contact in the area is almost completely forbidden. Communication wasn't any more productive once we reached shore. The shoddily uniformed warden pantomimed that we were trespassing and that the only acceptable course of action was to turn around immediately. Having less than ten words of Russian between us, it was difficult to explain ourselves, but we did have a letter of introduction written by the warden of Zaibaikalsky National Park that was to the south of us, explaining that we were a team exploring the possibilities of an international peace trail circumnavigating Lake Baikal. Not totally fictitious, our letter seemed to placate the agitated warden. After a couple of radio transmissions to his colleagues, he returned, handing us a large Amul fish as a sort of peace offering, and allowed us to continue on.

The next several days of paddling were amazing. There was a true feeling of wilderness and isolation and a growing sense of the vastness of Lake Baikal. The weather was in our favor, making for a leisurely effort of paddling down Baikal's northeast shoreline. Wildlife was abundant, from rafts of merganser swimming beside our boats to the meandering tracks of the elusive Siberian Brown Bear that we would find pressed into many of the sandy beaches upon which we landed.

But we still hadn't spotted any Nerpa and, as we pushed into the small community of Davsha on the southern leg of this trip, we began to fear we wouldn't see any before it was time to leave.

In Davsha we teamed up with a local biologist named Olga, who took us on a four-hour tour of the surrounding countryside. Olga had been working in association with the Barguzinsky preserve for many years and, through an interpreter, told us about the struggles that Baikal has faced in the last 150 years from pollution running unchecked from pulp mills and a military factory at the south end of the lake, to a huge hydroelectric dam built on the Angara River, Baikal's largest outlet, that had raised the lake level several feet over the years since its construction. She told us we were lucky to be on the lake that particular summer, as many years there are massive forest fires that ravage the vast Taiga, or Boreal forest, that carpets much of Siberia, often leaving the Baikal basin choked in thick smoke for much of the summer. After the creation of the refuge, "...the sables have made a good comeback," Olga said, and even the Nerpa, who were hunted into near-extinction for their pelts, meat and blubber in the 20th century, have rebounded. Even though permits are issued for the culling of three to four thousand Nerpas each year, the population has settled around sixty thousand now from barely a 1,000 members of the species in the 20th century—but this is still a far cry from the hundreds of thousands of seals that were once native to the lake.

Baikal's inclusion as a World Heritage Site in 1996 has also done much to advance the cause of environmentalists and efforts to preserve its unique geology and biosphere.

Our best chance to see the Nerpa was on or around the Ushkany islands, a tiny archipelago in Zaibaikalski National Park that rises out of the deepest region of Lake Baikal.

(CONTINUED ON P 6)

American Polar Society member Dr. Austin Mardon CM, Canadian polar scientist and his colleague, Erin Campbell, tell us why such an award and the recognition it affords is long overdue.

Economics and Nationalism: Why Canada Needs to Institute a Polar Service Medal

by Erin Campbell & Austin Mardon, CM;
Antarctic Institute of Canada: aamardo@yahoo.ca

Approximately 50,000 indigenous people inhabit the Canadian Arctic today (NOAA, sec. 8), yet we often think of the Arctic as a barren wasteland rather than an environment that has been able to support northern communities that have existed for uncounted generations before modern inventions like plumbing, heating, or motor vehicles. I would like to think that for most people, including myself, the Canadian Arctic is a vast land of mystery. It's hard for me to believe that a land so preserved in geologic time could be barren or empty. Rather, I see the potential for discovery and exploration whenever I think of the almost incomprehensibly wide Arctic landscape. I see the precarious balance of life in an environment where the odds of survival are already slim, and how we are accelerating global change too fast for our polar ecosystems to adjust. I think about the people who have dared to uncover the secrets locked in its ice; those who have succeeded, and those who have failed. How many of them have been Canadians?

Dr. Austin Mardon, an Edmonton-born geographer, writer, and researcher, has long been attempting to increase awareness about the importance of a Canadian presence in the Arctic and the Antarctic regions. He travelled to Antarctica in 1986 for two months on an American NASA/NSF-sponsored Antarctic Meteorite Recovery Expedition (which left him with permanent damage from frostbite), and since then, has been an advocate for the institution of a Canadian Polar Service Medal, which would honour explorers and researchers who work in the Polar Regions. Interested in the Polar Regions since childhood, Mardon has since gone on to achieve great things in the Antarctic. He ended up only 90 miles away from the South Pole (a Canadian record), he received the United States Navy's Antarctic Service Medal in 1988, largely, he says, because Canada does not have an equivalent award, and he is also a director for the Antarctic Institute of Canada, an organization dedicated to increasing Canadian polar awareness as well as awareness for the Canadian Polar Service Medal. Despite a proposal to the Federal Minister of National Defence, a TV appearance, his own published efforts and media press, the Canadian government has yet to introduce such an award.

According to Dr. Mardon, increasing public awareness of this issue is vital; however this may also be his biggest challenge. When asked his opinion on why Canada is the last Commonwealth Nation to institute a Polar Service Medal, he replies: "It boggles me. Maybe apathy." Canadians have garnered a reputation for being apathetic in the past, and with the current issues in the Polar Regions being a fairly new concern for the average Canadian, it could take a while before we really understand the importance of action now rather than later. Growing up in Canada, when I was taught social studies in elementary school, and we learned that Canada was made up of 10 provinces and two territories (which has since become three with the inclusion of Nunavut), the Territories always seemed to be on the periphery of our studies. We were never taught about them with regard to modern industry, economics, or government. The Territories were only mentioned when we talked about the Northwest Passage and initial European exploration before Canada became a sovereign nation, as if they were lands that had been economically vital at one point, but ceased to be with the decline of the fur trade and the settlement of the first Canadians. This attitude may explain our current apathy concerning the North today, and why it has become so commonplace to disassociate our national identity from the Canadian Arctic.

Another hurdle, says Mardon, is that the Canadian government tends to see the Arctic and the Antarctic regions as mutually exclusive, even to the point of viewing interests in the Antarctic as conflicting with those in the North. This, Mardon says, is absolutely false. Rather, polar pursuits in both the North and South regions should complement each other. At this point, both Arctic and Antarctic ecosystems are so fragile that we cannot limit our resources to just one region: "Polar regions can be thermometers for problems in the world scientifically," says Dr. Mardon. Therefore, they should both be treated as such, and the idea that one may interfere with the other is unsupportable.

So why does the Canadian government seem so reluctant to become involved in the polar regions, especially Antarctica? Until recently, the only people who dared explore the Polar Regions did so out of colonial pursuits to chart new territory, and to lay claim to said territory. Today, involvement in the Arctic and Antarctic has been bred out of passion for these ecosystems, and the desire to learn more about them. We have palaeontologists, geographers, glaciologists, and even modern adventurers who seek out the poles not to plant their nation's flag in the ice, but rather in an attempt to understand the complex and unique nature of the Arctic and the Antarctic regions. In Canada, these official groups are few. Recently groups such as SCAR, the Scientific Committee on Antarctic Research, and the CPC, the Canadian Polar Commission, have begun to emerge in Canada, but we have yet to officially recognize the feats of both our past explorers and our present researchers. As a self-described "very patriotic Canadian" Mardon claims that the Canadian government's unwillingness to institute a Polar Service Medal speaks volumes about our opinion on Arctic sovereignty, specifically that it is not important. He also claims that apathy has a lot to do with this opinion, but that "in the post-Cold War world, we should be proud to be Canadians." Perhaps the issue is with association. Maybe Canadian citizens do not associate Polar sovereignty with nationalism, because it is hard for us

(Continued on p. 6)

(Economics and Nationalism..." continued)

to understand how a presence in the Arctic and Antarctic directly affects us as Canadians.

Despite the fact that the people who inhabit the north are Canadians, we generally disassociate the Arctic from being a part of Canada. Although much of the Arctic Circle remains international territory, according to the Meridian Newsletter, a CPC publication, "since 1930, no State has ever challenged Canada's complete sovereignty over any of the islands of the Canadian Arctic Archipelago" (Pharand, 1). This will soon change; the melting of sea ice has enabled us to test for oil in the Arctic. Other nations are already preparing for when the Northwest Passage will open up enough to enable resource extraction on a massive scale. According to Dr. Mardon, there are government plans to build a port in the Arctic that would facilitate research, and this will be accompanied by an increase in military presence. Officially, the Canadian government has asserted our military sovereignty in the North, as stated by Foreign Affairs Minister Lawrence Cannon: "Canada is an Arctic power, and our government understands the power of the North. Therefore, when and if necessary, this government will not hesitate to defend Canadian Arctic Sovereignty, and all of our interests in the Arctic" (Boswell, par. 4). Unfortunately this statement, although reinforcing to the public that the Arctic is important to Canadians, also limits this importance to that of possible economic gain, and our involvement in this region to a stronger military presence.

Our historic disinterest with the North is a result of many things, including limited government programs dedicated to building a presence in the Arctic, to the intimidating, formidable climate. We are fooled by the ostensibly forever-unaltered landscape of the Arctic. We hear that glaciers are melting, and that polar ice is thinning, but it is not a change we can really see. For the average Canadian, we tend to take the Arctic for granted. However, nations such as the United States, the UK, Australia, New Zealand, Russia, and Norway are just a few who have long heralded the importance of exploration in the Arctic and Antarctic. Despite the fact that Canada is within arm's reach of the Arctic, we are behind these other nations in terms of our presence in the North and our public awareness of Polar exploits. Dr. Mardon believes that the greatest role in furthering his cause must be taken up by Canadians themselves. It must move from the ground up, from municipal to federal government representatives.

Recently Canadian efforts in the Arctic have earned more publicity due to the potential for natural resources that will become available to us for the first time; however it is not clear whether the Canadian government will institute a system that recognizes those Canadians who risk their lives for their country in the Arctic and Antarctic regions. Dr. Mardon believes building pressure to publicly claim the Arctic in light of possible economic gain has contributed to government plans to build a port in the Arctic, rather than a growing sense of national identity which includes the North. This may be why we have yet to institute a Polar Service Medal. (But we cannot abandon our efforts, stresses Mardon.) With growing interest in the Arctic, we may soon see some form of government recognition for those Canadians who, like Dr. Mardon, risk their lives for the benefit of Canadian research and global understanding. ❑

("of Nerpas..." continued)

The *Natalia* arrived on time at Davsha, where we took on an additional passenger, Masha, a woman from Moscow who was in need of a ride back to Irkutsk after spending the summer at the isolated Davsha community. Masha had worked as a translator. Later, amid an animated evening of good cheer as we plodded westward toward the Ushkany islands, over shots of Vodka with Evgeny and Igor, and with Masha's help, we all got to know each other's lives much better.

The next morning we picked up a park warden who, in exchange for some rubles to buy petrol for his dilapidated skiff, agreed to guide us to the most advantageous spot to see Nerpas. Foul weather was coming in from the North, bringing with it some growing swells on the great inland sea that crashed violently into the rocky flanks of the lonely Ushkany islands. With such rough waters, the warden didn't think that we would see any of the rafting Nerpas who usually sun themselves on the jagged rocks dotting the Ushkany shoreline during the fairer weather.

Still, we decided to take the chance. In a protected harbor, we moored and waded ashore, quietly making our way across the fern-carpeted, thickly forested landscape to an opening on the opposite side of the crescent-shaped island. We quietly peeked over a rock outcropping and saw, just a hundred feet away, about a dozen Nerpas basking on rocks in a protected cove.

We were deeply satisfied by our Nerpa encounter as we bade goodbye to the park warden, sympathetic to his dire lack of funding by the Russian Government. The weather continued to degrade as the *Natalia* struggled to get us across the lake, bobbing in the frothing waves that washed her upper deck. To fight off seasickness, Evgeny's son Igor scaled the mast and sat in the crow's nest, washing down smoked fish with warm beer—a vision that only inspired deeper waves of nausea in the rest of us!

After being dropped off on a ramshackle pier at the town of Hozier on the south end of Baikal's largest Island, Olkoln, we said goodbye to Evgeny, Igor and the *Natalia*.

Though still a remote location, Olkoln is a destination for vacationing Siberians from the capital city of Irkutsk, and even adventurous travellers from western Europe have been known to come to plant their flags on the most accessible shores of Baikal. We toured the island and spent several pleasant days exploring some of the more remote corners of its shoreline in our kayaks. At one of our camps, a man showed us some ancient shards of pottery he had found near his tent, reminding us of the ancient dimensions of this lake, both geologically and culturally.

Our paddling ended at a majestic outcropping of rock known as the Shaman's Stone, a sacred location for the indigenous Buriat religion. The rock rests at the end of a nearly perfect crescent bay filled with clear turquoise waters that reveal features leagues beneath the surface and which invoked vertigo among us as we glided our paddles across the bay's still waters.

Heading back to Irkutsk and, eventually, our homes and families, we deeply appreciated the showering of good will from the Russian people that had made our journey possible.

Even so, while deeply satisfied with our experience, we still knew that although we had explored the lake as few people ever have, we had barely scratched the surface of knowing one of Earth's great and mysterious locations.

Scott Hoffman is a writer, photographer and videographer who makes his home in Big Bear City California. An avid traveller, he is currently working on a film about kayaking in remote areas of Patagonia. ❑

Record Number of Yachts Traverse Northwest Passage in Summer 2009

by Harry Stern, Polar Science Center, Applied Physics Laboratory, University of Washington, Seattle

Photo by David Thoreson, Blue Water Studios (www.bluewaterstudios.com).

Three sailboats anchored at Gjoa Haven on August 24, 2009. Left to right: Silent Sound, Ocean Watch, Baloum Gwen. These three boats all made the passage from west to east.

The fabled Northwest Passage—the long-sought sea route connecting the Atlantic and Pacific Oceans across the top of North America—witnessed the transit of a record-breaking 11 private vessels in the summer of 2009. First traversed in 1903-1906 by Roald Amundsen in the sailing ship *Gjoa*, it wasn't until 1977 that the first private yacht made the journey. Up until the first decade of 2000, this feat was repeated by fewer than two dozen private boats. Although much of the sea ice in the intricate waterways of the Canadian Archipelago melts out in summer, there are often choke points that remain blocked to all but icebreakers. However, during the record-low sea ice conditions in the summer of 2007, all the ice did melt out, and four private boats breezed through. In summer 2008, light ice conditions again allowed seven private boats to make the passage.

Sea ice conditions in summer 2009 did not look promising as late as July. An unusual plug of ice in Amundsen Gulf blocked the west end of Dolphin and Union Strait. More menacingly, older and thicker multiyear sea ice had drifted down M'Clintock Channel, clogging Larsen Sound and Victoria Strait, where Franklin's doomed ships were beset in 1846. However, as August progressed, the ice melted out just enough to allow small boats to pick their way through the floes, though not without anxiety and danger. The adjacent tables list the private boats that traversed the Northwest Passage in summer 2009. The accounts of their journeys, as given on their web sites, make for interesting reading.

What does the future hold for the NorthwestPassage? Summer Arctic sea ice is on a downward trend. The annual minimum in sea ice extent occurs in September. The minimum in September 2009 was the third-lowest in the 30-year satellite record, 24 percent below the 1979–2000 mean (NSIDC, 2009). The downward trend is expected to continue. However, the Arctic Marine Shipping Assessment (AMSA, 2009) finds that "The Northwest Passage is not expected to become a viable trans-Arctic route through 2020 due to seasonality, ice conditions, a complex archipelago, draft restrictions, choke points, lack of adequate charts, insurance limitations and other costs." For small boats, besides uncertain ice conditions from year to year, there are few aids to navigation, only a handful of resupply facilities, and very limited rescue services (one or two Canadian Coast Guard icebreakers patrol the passage). Weather is always a factor, and a new study by Simmonds and Keay (2009) finds that as ice extent has decreased, Arctic storms have become more intense, particularly in the last few years, because large areas of open water provide more energy to storms. Considering all these factors, it seems likely that the Northwest Passage will remain a challenge to mariners for years to come. ❑

Private Vessels Making the Northwest Passage in Summer 2009, West to East

Name	Flag	Type	Len.	Web site
Ocean Watch	USA	sail	64'	www.aroundtheamericas.org
Baloum Gwen	Belgium	sail	49'	baloumgwen.fr
Silent Sound	Canada	sail	40'	www.openpassageexpedition.com
Arctic Mariner*	UK	sail	17'	www.arcticmariner.org

** as far as Gjoa Haven*

Private Vessels Making the Northwest Passage in Summer 2009, East to West

Name	Flag	Type	Len.	Web site
Fleur Australe	France	sail	65'	www.fleuraustrale.fr
Fiona	USA	sail	42'	www.yaachtfiona.com
Bagan	USA	power	57'	www.northwestpassagefilm.com/arctic
Precipice	USA	sail	30'	sailingvesselprecipice.blogspot.com
Perithia	Germany	sail	44'	www.perithia.de
Polar Bound	UK	power	48'	en.wikipedia.org/wiki/David_Scott_Cowper
Apoise		power	219'	yachts.monacoeye.com/yaachtsbysize
Glory of the Sea	France	sail	50'	www.charlesherich.org, www.respectonslaterre.tv

In addition to the above private vessels, two cruise ships also made the passage: the Hanseatic (west to east) and the Bremen (east to west).

Roald Amundsen - Story of an Explorer

by John Splettstoesser

Roald Amundsen, subject of a recent search, was most famous for leading the first expedition to reach the South Pole on 14 December 1911, just 33 days before Capt. Robert F. Scott, thus winning the prize for Norway rather than Great Britain. However, his exploits as an explorer and adventurer transcend that event when other 'firsts' in his life are reviewed (see below).

Amundsen disappeared on 18 June 1928 while aboard a Latham 47 flying boat on its way to Spitsbergen to search for Umberto Nobile, the Italian explorer whose airship *Italia* had apparently crashed in the Arctic. From the last radio contact from Amundsen's flight, it has been calculated that the aircraft went down in the ocean about 19 miles south of Bear Island, with all hands lost. Only a pontoon and fuel tank from the aircraft were ever found; the fuel tank is now in a museum in Tromsø, Norway.

From 24 August to 5 September 2009, attempts were made to locate the wreck using two Norwegian ships equipped with an autonomous underwater vehicle (AUV) known as Hugin 1000, which can make high-resolution maps of the seabed, and a Scorpion 22 remotely-operated vehicle (ROV). The search focused on a 35 square mile area of the sea floor, and was documented by the Germany production company ContextTV.

Regrettably, the search was unsuccessful. It is possible that the flying boat was once there, but since removed from the site or completely destroyed by the massive amount of industrial fishing activity over the last decades. Sonar data of the sea floor showed trawler drag marks in much of the search area. For the moment, the disappearance of Amundsen, his aircraft and crew remain a mystery.

A review of earlier exploits is worth a reminder of this great man and national hero of Norway. (For more information, photos and press releases, please visit: http://www.searchforamundsen.com)

1898

Roald Engelbregt Gravning Amundsen was born 16 July 1872, in Borge, Norway, and received his first taste of polar adventure when he signed on as First Mate on the *Belgica* expedition, headed by Adrien de Gerlache of Belgium. The expedition is famous for several reasons. First of all, it made the earliest wintering south of the Antarctic Circle when the ship *Belgica* was beset in ice in 1898. Secondly, it was an international expedition, comprising Amundsen from Norway, Emile Racovitza from Rumania, Henryk Arctowski from Poland, and Dr. Frederick Cook, an American, in addition to crew from Belgium.

1903-06

Polar fever had developed for Amundsen by the time that he organized an expedition to transit the Northwest Passage, from east to west, on the vessel *Gjøa* (pronounced 'Joe-ah'), beginning in 1903 with a six-man crew. Much of the passage to the Pacific was ice-free that year, but he anchored at King William Island (Gjøa Haven) for the 1903-04 winter to perform magnetic observations as a continuation of the discovery of the North Magnetic Pole by James Clark Ross in 1831. The location is on the route through the Passage, but the stopover had many advantages for Amundsen, where he learned the art of dog-sledging, the ways of the Inuit, advantage of fur clothing, etc. Gjøa Haven settlement is also known as *Usqsuqtuuq* ('*place of plenty of fat,*' because of blubbery seals in the area).

Because of ice he had to spend a second winter there and left on 13 August 1905, to continue west in the Northwest Passage, but his ship became iced in near Herschel Island, Yukon, for a third winter. During the winter Amundsen skied 500 miles south to the nearest telegraph station in Eagle, Alaska, to announce his successful transit of NW Passage, and then returned to *Gjøa* in March, but she was iced in until 11 July 1906. He reached Nome on 13 August 1906, and went on to San Francisco 19 October. *Gjøa* was pulled ashore and maintained as a tourist attraction. A 12-ft-high 'bauta' (stone shaft, or memorial pillar) and plaque in Golden Gate Park was established to mark the ship's presence there. *Gjøa* was returned to Norway in 1972, and is now in the Maritime Museum in Bygdøy (Oslo), where *Fram* and *Kon-Tiki* are located.

1911-12

Only a few years later, Amundsen prepared for an expedition ostensibly to the North Pole using the ship *Fram*, the same ship that Fridtjof Nansen had earlier attempted to drift across the Arctic Ocean, only for Amundsen to hear that the North Pole had been claimed

Roald Amundsen, commemorated in Tromsø, Norway

by Frederick Cook and Robert Peary. He then changed plans to head south and attempt to reach the South Pole. After establishing a base which he called Framheim (after the expedition ship *Fram)* at the edge of the Ross Ice Shelf, he set out toward the south into an area unknown to anyone at that time. Using dogs and depot supplies he reached the Pole on 14 December 1911, finding a route up the Axel Heiberg Glacier. His four companions were Olav Bjaaland, Oscar Wisting, Sverre Hassel, and Helmer Hanssen. Amundsen chose his men on the basis of their various skills, including skiing. Bjaaland, for example, won the Nordic ski championship in 1902, and was also an expert carpenter and musician.

On return to Framheim from the Pole, Amundsen went to Hobart on *Fram* to announce to the world his achievement of the

Pole, staying in Hadley's Hotel in March 1912. The hotel is still there, with his presence marked with a plaque. The room in which he stayed is not evident due to later remodeling, which incorporated it within others.

Amundsen's men remained loyal companions after achievement of the South Pole, and some unusual circumstances make it worth mentioning two of them. Wisting joined Amundsen in the drift of *Maud*, and also in the airship *Norge* with Amundsen and Lincoln Ellsworth in 1926. Hanssen had been Amundsen's second mate on *Gjøa*, and later in the drift of *Maud* in 1918. When Amundsen disappeared in 1928, Wisting led one of the search parties. In 1936, after *Fram* had become a museum in Oslo, Wisting asked for permission to sleep aboard. The next morning he was found dead in his old cabin.

Hassel worked for the Norwegian customs after the South Pole expedition, and on a visit to Amundsen, fell dead at Amundsen's feet.

1918-22

In 1918, Amundsen left Norway on *Maud*, intending for the ship to freeze in the ice pack and drift toward the North Pole and come out the other side at Svalbard, much as Nansen attempted earlier but failed to complete. *Maud* never entered the ice pack, but instead completed the Northeast Passage, or Northern Sea Route, from west to east, across the top of Asia, in 1922. Amundsen's expedition was the fourth to do so (first was Adolf Erik Nordenskiöld, 1878-1880, aboard *Vega*).

Amundsen disappeared on 18 June 1928 while aboard a Latham 47 flying boat on its way to Spitsbergen.

Maud was sold to Hudson's Bay Co., renamed *Baymaud*, but was found to be too heavy and too deeply drafted for practical use. Instead, the ship was used as a warehouse at Cambridge Bay, Nunavut. She is now a burnt-out wreck in shallows near the town. In 1991, Norway investigated the cost to restore the ship and move it to Norway. Because the estimate came in at $4,200,000, the Baymaud remains where it is.

1925

Amundsen's next adventure was an attempted flight to the North Pole. He left Spitsbergen 21 May 1925, on two Dornier flying boats, with American explorer Lincoln Ellsworth plus 4 crewmates. They intended to land at the North Pole, take scientific measurements, abandon one aircraft and fly the other to Alaska. The North Pole was not reached, with aircraft crash-landing 136 miles south of the Pole. One plane was damaged beyond repair, and it took three weeks to repair the other and make a runway to take off and return safely to Spitsbergen.

1926

Amundsen departed 10 May 1926 in the airship *Norge* from Spitsbergen to Alaska via the North Pole with Ellsworth, Wisting, and Nobile. They reached Alaska 70 hours later on 12 May, thus becoming the first confirmed expedition to sight the North Pole, albeit from the air. Amundsen and Wisting thus also became the first two people to see both geographic poles. ❑

Walruses Suffer Substantial Losses as Sea Ice Erodes

***New York Times*, 3 October 2009, by Andrew C. Revkin**—Half a century after Pacific walruses began recovering from industrial-scale hunting, marine biologists are growing worried that they face a mounting threat from global warming.

Masses of lumbering walruses have been crowding on beaches and rocks along the Russian and American sides of the Bering Strait in the absence of the coastal sea ice that normally serves as a late-summer haven and nursery.

While the retreats in sea ice around the Arctic this summer were not as extensive as in 2008 or 2007, the Chukchi Sea, at the heart of the walrus subspecies' range, was largely open water.

On Thursday, biologists from the United States Geological Survey issued a report concluding that 131 walruses found dead near Icy Cape, Alaska, on Sept. 14 died from being crushed or stampeded. Several thousand walruses had been congregating in the area, a situation that scientists from the agency said was highly unusual.

Last month, Russian scientists and the World Wildlife Fund had reported several thousand crushing deaths among tens of thousands of walruses crowding along the western shores of the Chukchi Sea.

Walruses have endured more than 15 million years of climatic ups and downs, so experts do not foresee the species' becoming extinct, particularly if hunting remains controlled. (Thousands are legally killed each,year by indigenous communities in both countries.)

But there has been growing confirmation that the walrus is suffering substantial losses as the sheath of sea ice in coastal waters erodes in the summer.

The floes normally provide a floating nursery for pups while adults dive to root for clams and other food in the seabed in shallow coastal waters along the continental shelf. Last month, the federal Fish and Wildlife Service, responding to a lawsuit by the Center for Biological Diversity, an environmental group, concluded that there was sufficient scientific evidence of rising stress on the animals from climate change to consider granting the Pacific walrus protection under the Endangered Species Act.

That review is under way, and the service [was] taking public comment until Nov. 9.

The polar bear, which is similarly dependent on sea ice, was listed as threatened under the species act last year.

"I think there is reason to be concerned," said Brendan P. Kelly, a marine biologist at the University of Alaska, Fairbanks, who has been studying walruses for several decades.

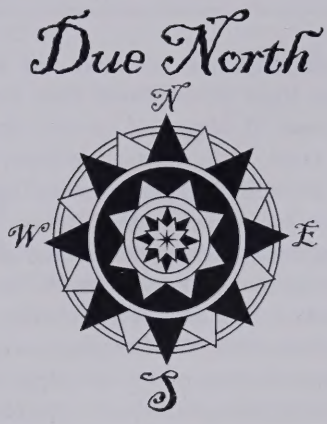
Fatal stampedes among walruses have occurred in past years, Mr. Kelly said, citing research he conducted on a similar event in 1978 and reports by hunters on islands in the Bering Sea more than a century ago. But the expansion of open waters along the coasts raises the odds and adds to other pressures on the animals, he said.

For the moment, the Pacific walrus remains abundant, numbering at least 200,000 by some accounts, double the number in the 1950s.

The Atlantic walrus, a subspecies in Canada, Norway, Russia and Greenland numbering about 22,000, has never recovered from sustained slaughter.

Dr. Kelly said the long-term forecast of warming and less summer ice for the Arctic did not bode well for the Pacific walrus.

"The Pacific population did recover," he said. "But it is hard to imagine that it will not decline in the coming century." ❑



by Arctic Editors
Herbert R. Drury and Moki Kokoris

Recent Arctic Developments

HERB: There is such a wealth of information available today that I can list but a few of the current items involving Arctic regions. Space limitations preclude my citing of sources or giving details, but these are readily available in the media. The big story these days, of course, is global warming and climate change, especially evident in polar regions. Virtually everything in today's column relates to that issue.

There has been much news about the 'Catlin Expedition' of three Britons trying to measure sea ice thickness all the way to the North Pole. It fell short of its goal due to equipment problems and melting of unexpectedly thin ice. This was one more example of the effect of temperature increases worldwide. Another indication is the growing list of vessels successfully transiting both the Northwest Passage across northern North American seas and the Northeast one over Siberia and Europe. There is now escalating tension between Arctic nations over erritorial rights and natural resources as more land becomes exposed by melting of its ice cover.

Other recent developments in the Arctic include the following: a partial listing only. Russia is expanding its oil exploration north of Siberia, as could be expected. Sweden and Finland apparently plan to allow a Russian-built gas pipeline to traverse their Baltic Sea waters to Germany and Europe. In the past, much of the latter's gas has come from Russia by way of Ukraine where political unrest threatens that supply. Shell Oil may be allowed to drill in parts of the Alaskan coast which many people fear will ruin that pristine area. Another contentious issue is the proposed "Pebble" gold mine in western Alaska's Bristol Bay region, one of the greatest salmon fisheries of the world. Recent magazine ads have included dozens of organizations opposed to that project.

Other news concerns increasing movement or migration of all kinds of living things in response to weather-related environmental changes. These include plants, animals, fish, microorganisms, and even people in both the Arctic and elsewhere heading into new ranges or territories. The list continues to grow, and includes ever-increasing human population moves to avoid relentless natural disasters of rising frequency. Glaciers in the European Alps have been found to be releasing toxins in meltwaters accumulated over decades as the world became more industrialized.

Some Alaskan communities are having problems with shore erosion and sea water encroachment, while low-lying places like the tropical Maldive Islands of the Pacific and Venice, Italy are fearing inundation if global warming continues as predicted. Groups of countries are starting to band together to influence political action in upcoming conferences on these and related issues that you may have heard about by now.

Ice cores from polar regions and mountain glaciers have been revealing climatic trends over hundreds of thousands of years. Now we are getting further information from deep sea drilling, Arctic lake bottoms (on Baffin Island so far), and major river deltas of the world that goes back millions or even billions of years. Most of these studies increase our knowledge and understanding of the Earth before and during the evolution of life. But recent discoveries keep telling us that relatively sudden changes are unprecedented in Earth history and indicate undeniable human influences. The continuing loss of Arctic ice has led to predictions of stormier, more severe conditions in the future, and possible ice-free transportation routes within as little as a decade if current climate trends continue.

New satellites are being launched to measure Earth systems. One of the newest ones will survey ocean salinity, soil moisture, wind patterns, and other factors affecting sea currents, storms, weather and populations in the Arctic and elsewhere. Much of the north country has been found to harbor large amounts of carbon frozen in permafrost, but now harmful methane that raises temperatures is being released in ever-increasing quantities as the Arctic tundra melts. More recent studies have demonstrated that large peat beds, especially in parts of Asia and China, are capable of similar destructive action when exposed to the atmosphere. These deposits, largely overlooked until now, are apparently comparable to forests as repositories of carbon which can escape as CO2 when conditions change. Barrow, Alaska is one of the places being mapped to delineate various types of tundra plant communities, each of which may have a different potential to release carbon products when thawed. Elsewhere, genetic studies of frozen bison and mammoth remains are teaching us about evolution of both life and climate in cold parts of the world offering further clues to human influences since the dawn of industrialization.

There are also computer programs and models working on environmental and climatic changes everywhere. They are monitoring ocean and wind currents, chemistry, moisture, temperature, soils, gases, aerosols and just about everything in our environment. One example under study is the 'lubricating' effect of warming soils under glaciers, or the 'pulling' effect of warm seas on their 'snouts' as possible reasons why so many are 'calving' icebergs more rapidly, sliding down, or retreating up mountain valleys or away from coastlines. Studies such as these continue to confirm the gradual rise in earth temperatures.

These are just a few examples of current events in the Arctic and elsewhere. We are looking ahead to the United Nations sponsored international conference on global warming and climate change scheduled for December 7 to 18, 2009 in Copenhagen, Denmark that will already be history when you read this. Even though located in a country with major Arctic interests, it will concern the entire world and is expecting leaders from 192 nations. There have been preliminary meetings all over the globe for two years preparing for this 'final' conference to hopefully resolve the growing problems of global heating and replace the Kyoto Protocol (never ratified by America) due to expire in 2012. By the time this reaches you, the outcome should be known.

This seemingly insurmountable task is compounded by several factors including: continued skepticism and lack of understanding by the general public, vested interests of virtually every entity involved, and the horrific question of who will pay the enormous costs envisioned in this era of economic trauma. Less developed nations are fearful of richer countries trying to force them to pay for

conditions they did not create. And individual industries, groups, or interests are wary of being 'unfairly' taxed or burdened in order to help pay for others unable to do so. The United States could become a leader in this movement, but as of this writing our Senate has not yet decided on a path we can or should take in this debate. If only a 'framework' for possible solutions comes from the December meeting, it may take years to develop the details and get ratification of the various proposals. I hope to have more on this event, which has such potential for the Arctic, in subsequent issues of "The Polar Times." Stay tuned! ❑

What's Final is Final....

Moki: In my travels, during my presentations, and even in darkened alleyways, I am often asked about the polar bear. Those questions are always posed with the same accentuated word: Can you tell us the REAL truth about the current polar bear situation?

How exactly I became an ambassador of the polar bear is still a mystery, but my obsession with the ice bear notwithstanding, my answers are greeted in the same manner as when E. F. Hutton talked – at least in the old television commercial: People listen.

The fact that climate change has negative impacts on polar bears and their habitat, and is their most long-term threat, is no longer up for debate. The Arctic ice is disappearing at an alarming rate, forcing the bears into conditions to which they cannot adapt. No wonder this iconic and charismatic creature has become the poster child for climate change. As the Arctic ice melts, as pollution and contaminants build and as industrial development expands into their vulnerable territory, the bears must either adjust or they will perish through drowning or starvation.

So, what is the REAL truth? First of all, I find the adjective redundant, its implications perplexing, but I'll do my best to explain the realities, which are fundamental and scientifically factual.

Monitoring the polar bear and its movements is exceptionally difficult at best. Most are solitary creatures, congregating only when mating or while waiting for the Arctic Ocean to freeze, which heralds the beginning of their hopefully prolific hunting season. Polar bears are also known to roam vast distances, as evidenced by one radio-collared female that, over the course of four months, traveled from Alaska to Greenland via the North Pole, covering well over 3,500 miles!

Most questions asked of me reveal that many people assume that the polar bear is little more than a white grizzly or Kodiak bear. Why can't the polar bear simply change its diet from ring seals to salmon and berries and insects? The answer is simple: unlike most other bears, the polar bear is not an omnivore, but a carnivore. To elaborate even further, *Ursus maritimus* is an obligate carnivore, which means that its digestive system is highly specialized like that of the koala (which eats only eucalyptus) or the panda (its diet strictly bamboo). Two facts are central to the polar bear's existence: it requires immense quantities of fat in its diet, and it obtains that fat by hunting and eating seals on Arctic ice.

Yes, the polar bear can and will eat refuse from garbage dumps or food stolen from polar explorers' tents (or even hapless explorers at times), but only ring seals, walrus and the occasional beluga or narwhal will sustain it. To expect polar bears to modify their diet would be the equivalent of asking humans to switch from eating at restaurants to grazing in pastures (although I can think of a few politicians I'd like to put out to pasture, but I digress…).

Couldn't the polar bear learn to permanently live on land? Again the answer is no, and for similar reasons. Ring seals, which make up the majority of the polar bear's diet, live, mate and give birth to their young exclusively on the Arctic ice. Even though polar bears are expert hunters, possessing the best sense of smell of any animal on Earth (they can detect a ringed seal through 3-foot-thick ice and a whale carcass from twenty miles away), no ice = no seals. Finding an accessible whale carcass is rare. Walruses are formidable beasts, so hunting them is risky business, for even the heaviest recorded polar bear weighing in at one ton (adult walrus bulls approach two tons in weight). Additionally, the energy expended chasing a reindeer would negate the energy gained by eating its meat and fat. Therefore, many polar bears essentially fast during their months on land, between the spring ice breakup and the autumn freeze. More profoundly still, without the fat reserves that come from seal blubber, a pregnant polar bear's body reabsorbs the embryos. No seal blubber = no bear cubs.

The more complicated question is based on the belief that the polar bear is a descendant of the brown bear. Couldn't they simply devolve? Unfortunately, evolution is never reversed. Polar bears will not turn back into brown bears; they will simply die off. There is no question that the polar bear is looking down the barrel of extinction. Of what was an overall population of forty to fifty thousand across the Far North, the current figure is now 22,000 – with increased concentrations in certain areas, while other regions see major declines.

Recently, I had the distinct privilege of hearing a presentation by Richard Ellis at the Explorers Club in New York. The event coincided with the release of his latest book, titled *On Thin Ice – The Changing World of the Polar Bear.* Richard Ellis admits that he wrote the book not for us, but for the bears. In his own words, he states, "I chose to defend the polar bear from political and anti-environmental attacks because I was shocked that the great white bears, always perceived as invincible rulers of the Arctic, were threatened by anthropogenic factors that they, no matter how ferocious and iconic they were, were powerless to resist."

Few other tomes on the topic are as comprehensive as this anthological hard-cover publication. Although I complacently presumed I knew most everything there was to know about the big white bear, I was unceremoniously proven wrong (she types as she humbly hangs her head). Notes were feverishly scribbled by me on the back of the program sheet, but when it became clear that this book was the topic's own rendition of "Everything You Always Wanted to Know About Polar Bears but Were Afraid to Ask," I chose to purchase a copy, which Mr. Ellis was generous enough to Hancock for me. And no! You may not have it! It's mine, all mine, the shamelessly chocolate-fingerprinted and sticky-noted pages included.

Both Ellis and I are putting stock in the Obama administration to right the wrongs of the previous administration. Polar bears, more than any other species, are dependent upon the polar ice cap for their survival and, drastic measures are taken to slow down the melting, the bears, without their life-sustaining ice pack, will swim into oblivion. I would end with a personal note, but Richard Ellis' words are far more circumspect than mine could ever hope to be: "There will be a special place in Hell reserved for those who supported the fossil fuel industry at the expense of the world's precious wildlife." There's a sobering statement for you! ❑

***New York Times*, Sunday 13 December 2009**—*In the book review supplement, readers can find an extensive and favorable review of On Thin Ice by Richard Ellis. Also, anyone interested in the current status of polar bear hunting by indigenous persons or sportsman should download* **pbsg.npolar.no/en/issues/threats/over-harvest.html**

Labrets, and Nosepins, and Ear Feathers, Oh My!

by Moki Kokoris

Stretching 1,500 miles from Kamchatka, Russia to the Alaska Peninsula, the Aleutian archipelago is a chain of windswept islands that has been inhabited for about 7,000 years. Although the Unangan (who speak the Aleut language) and the Alutiiq (Kodiak Islanders) view themselves as two culturally distinct groups, it was the invasion of the Russians in the 18th century that gradually organized them into a collective force to labor for the Russian sea otter fur trading empire. The term "Aleut" was coined by the traders to describe this homogenized group of enslaved natives.

German explorer and naturalist, Georg Wilhelm Steller, became the first European to describe the appearance of the indigenous peoples of these islands when he first traveled there with Vitus Bering in 1741. In his journal, Steller wrote: "One man had a piece of bone three inches long struck through crosswise above the chin just under the lower lip. Still another had a bone like it fastened in the forehead, and another, finally, had a similar one in each of the wings of the nose." A few decades later, a Russian explorer described their tattoo practices thusly: "Pricking the skin with needles made of seagull bones, the women sew in their cheeks, and rub with carbon, two lines, running from the lower part of the nose to the middle of the ears, and one broad band from the lower lip to the chin, which when they heal assume a bluish color."

Inuits from St. Lawrence Island. Note man on left with bone labrets at the corners of his mouth. Postcard from 1901, private collection

According to most historical accounts, tattooing among the Aleut was first practiced when women reached maturity. On Kodiak Island, it not only signaled adolescence, but social standing as well. Veniaminov, a Russian priest, observed that aristocratic women were more heavily tattooed than commoners, but not all had the same designs. Prettier women, and also the daughters of famous and wealthy fathers, endeavored to show the accomplishments of their fathers and forefathers in their tattooing, i. e. how many enemies or powerful animals that ancestor had killed.

Aleut piercing and tattooing represented natural symbols that simultaneously linked nature, society and culture into one organic whole. Body adornment justified human existence by not only influencing the supernatural and the dead, but by influencing the wishes and actions of living individuals in the community. In attempting to offer a fundamental interpretation of the meaning and function of the tattooing itself, it is necessary to mention other forms of Aleut body modification such as nosepins, ear ornaments and labrets.

Nosepins were worn by all indigenous groups of the Aleutian chain, by both sexes, with the incision being made shortly after birth. The ornament might be the shaft of an eagle's feather, a sea lion whisker, a piece of bark, bone, or a thin strip of leather decorated with tusk shells worn horizontally through the nose. Sometimes, women strung beads of coral and amber from the nosepin and let them hang down to the point of their chin.

Ear ornaments were another common form of adornment. Oftentimes, there were holes pierced all around the rim of the ear, with shells, beads, bones and amber placed into each hole. Before she was to be given to her husband in marriage, an Unangan woman would have ten sea lion whiskers pierced into each ear. Sea lion whiskers were considered to be very valuable and were regarded as tro-

Photo courtesy Aleut Corporation

Typical Aleut island landscape

phies that indicated a good hunter, or the wife of a good hunter. Because each sea lion has only four whiskers, "any number of them together must be testimony of having captured a great many". These whiskers also adorned the wooden hunting gear of Aleut men or were used as ornaments in the nose. A visitor to the Andreanov Islands in 1761 noted, "instead of earrings put into their ears, the women wear eagle and goose feathers behind the ears."

When the Russians first made contact with the peoples of the Aleutian archipelago, the one custom that intrigued them most was the insertion of various types of labrets into the lower lip and cheek. Captain Cook noted in the 1770s "what the men have thrust through the hole in the underlip has the resemblance of two boar tusks: two pieces of bone about one and a half inches long joining in the middle of the lip. And separating, by means of the tongue, they can move these bones and make them point up and down. Others have a single polished bone the shape and size of a large stud." Men perforated the lip by placing several studs of walrus ivory into separate holes that appeared to Captain Cook as representing "another row of teeth immediately under their own". This style of labretifery was common on the Turnagain River of mainland Alaska and on Kodiak Island where "men wear up to ten garnets – white in back, blue in front – underneath their lower lip."

Aleut adornment not only satisfied the need for display, celebration and accomplishment; it also embodied religious beliefs about the relationships between humans, animals and the deities who controlled human destiny and their surrounding world. For the inhabitants of this broken island chain, body art was created not only to lure, please and honor the spirits of animals; it increased social status, heightened spiritual power and enhanced beauty of the adorned by inscribing male and female identity.

Photo by J. Ramos.

Stone and bone labret. The bone piece (shaft) on the right was inserted from the inside of the mouth through a slit in the skin; the stone bead then fastened onto it from the outside. Sometimes these beads were decorated with amber or glass.

It is interesting to note that according to Aleut beliefs, their tattoos and piercings also cloaked or camouflaged the physical body from supernatural forces that inhabited their maritime environment. This view, widely held for many indigenous societies around the world, falls into the long-standing tradition of preventative "magic" aimed at warding off penetration or possession by evil forces that targeted vulnerable body passageways – namely the natural openings of the body (eyes, ears, mouth, etc.). Because the fear inspired by spirits in the landscape was great, Aleut peoples were compelled to develop a complex of personal adornment to neutralize the advances of these supernatural entities. In this way, the Aleuts attempted to project themselves beyond their everyday limits of space and time and, perhaps on some level, they envisioned supernatural control and, ultimately, their own immortality in the human bodies they manipulated.

A tattooed and pierced woman from Unalaska Island. Drawn by John Webber of the Cook Expedition, 1790

So, the next time you walk past a group of similarly adorned teenagers, blame it all on the Aleuts! ❑

Aleutian Islands Wilderness

Stretching 1,100 miles south and west from the Alaska Peninsula, the Aleutian Islands were set aside as the Aleutian Islands Reservation in 1913 and, in 1940, they became the Aleutian Islands National Wildlife Refuge. In 1980, the United States Congress reestablished the refuge as the Aleutian Islands Unit of the 4.8 million acre Alaska Maritime National Wildlife Refuge. Managed by the Fish & Wildlife Service, over 57 percent is designated "wilderness."

Consisting of more than 200 islands, which are the peaks of 57 submarine volcanoes (27 of which are still active) rising from near sea level to more than 9,000 ft., the 1,300,000-acre Aleutian Islands Unit is divided into seven island groups: Near Islands, Rat Islands, Delarof Islands, Andreanof Islands, Islands of Four Mountains, Fox Islands and Krenitzin Islands. Fewer than 1,000 Aleuts still inhabit the islands.

Most of the islands are covered with lush green tundra dotted with summer wildflowers and carpeted with grasses, sedges, mosses, lichens, and heath. Cool average temperatures prevent trees from establishing themselves. Marine mammals include the endangered Steller sea lion, threatened northern sea otter, and harbor seal. Most of the land mammals, including foxes, reindeer, and caribou, had been introduced by humans. The principal marine fish are halibut, cod, rockfish, sablefish, yellowfin sole, pollack, sand lance, herring, and salmon.

However, the Aleutians are best known for their birds. More than 10 million nest on the islands each summer. Puffins, auklets, gulls, storm petrels, cormorants, terns, kittiwakes, murres, pigeon guillemots and murrelets are among the most abundant species. The largest known colony of northern fulmars in America—topping one-half million—nests on Chagulak Island. Half of the world's emperor geese spend their winters in the Aleutians. Nowhere else in North America can you find whooper swans, tufted ducks, Siberian rubythroats, wood sandpipers, far eastern curlews and black-headed gulls.

Photo courtesy of Wilderness.net.

Aleutian Islands Wilderness.

The weather on the Aleutians is considered to be the foggiest, rainiest and windiest in the United States. Sea kayaking is popular but often dangerous due to violent storms and magnificently rocky shorelines, but for the persistent, the Aleutian Islands may well rate among the best wilderness experiences of a lifetime. ❑ — *Information compiled by Moki Kokoris*

A Clash of Polar Frauds and Those Who Believe

***The New York Times*, 8 September 2009, by John Tierney**—In September 1909, Dr. Frederick A. Cook and Robert E. Peary each returned from the Arctic with a tale of having reached the North Pole. Neither provided any solid proof or corroborating testimony; both told vague stories with large gaps. They couldn't even convincingly explain how they had plotted their routes across the polar ice.

Yet each explorer's claim immediately attracted its supporters, and no amount of contradictory evidence in the ensuing years would be enough to dissuade the faithful.

A century later, the "discovery" of the North Pole may qualify as the most successful fraud in modern science, as well as the longest-running case study of a psychological phenomenon called "motivated reasoning."

The believers who have kept writing books and mounting expeditions to vindicate Cook or Peary resemble the political partisans recently studied by psychologists and sociologists. When the facts get in the way of our beliefs, our brains are marvelously adept at dispensing with the facts.

The first people to believe Cook and Peary had obvious motivations: scooping rival newspapers and increasing circulation.

When Cook cabled his tale to *The New York Herald*, the newspaper promptly devoted its entire front page to the news: "Fighting Famine and Ice, the Courageous Explorer Reaches the Great Goal".

Several days later Peary cabled his claim to *The Times*, which had helped sponsor his expedition. *The Times* hailed his triumph, reporting that "the world accepts his word without a shadow of hesitation" and quoting Peary's denunciation of Cook as a fraud who "has simply handed the public a gold brick."

Each explorer promised to provide proof, but neither had taken along a trained navigator to corroborate the feat with independent celestial observations. Cook wasn't even competent himself to make the observations.

Peary was an expert navigator and traveled with companions who could also use a sextant, but he left them behind for the final week's push. Then, with no other trained navigator present, his daily rate of progress suddenly doubled.

Most puzzling of all, his expedition traveled for hundreds of miles across the ice without making any celestial observations to determine their longitude and to make sure they hadn't veered off course to the east or west. Then, after five weeks, Peary made an observation and refused to reveal the results to his companions. He was reported to look disappointed, and he left his diary pages blank that day. But he would later tell the rest of the world that his observation had confirmed his arrival at the pole.

How, in moving across jumbled pack ice continuously drifting in the wind and ocean currents, did Peary unerringly travel right to the North Pole? How did he achieve a nearly 500-mile "pole-in-one," as the historian Dennis Rawlins would later dub it?

> *A century later, the "discovery" of the North Pole may qualify as the most successful fraud in modern science ... "*

In 1909, such questions didn't trouble *The Times*, the National Geographic Society and Peary's other supporters. They were so busy denigrating Cook's claim—"the most astonishing imposture since the human race came on earth," according to *The Times*—that they overlooked flaws in their own hero. As scholars and explorers with much more Arctic experience than Peary have rejected his claim, the supporters have tried furnishing the missing proofs and explanations: if Peary said he made it to the pole, there must have been a way to do it.

They have dreamed up ways for him to navigate precisely north by studying wind patterns in the snow, looking at the sun or observing shadows. They have suggested he navigated by compass (even though it is notoriously difficult to use near the magnetic pole). They've tried to match his speeds near the pole (but have failed even when guided by GPS).

They have analyzed Peary's photographs and concluded that the shadows offer the long-sought proof he was at the pole, according to a report for the National Geographic Society in 1989. The society hailed the report as "unimpeachable" and today stands by it and by Peary's claim to the pole.

But the report was criticized by outside experts, who concluded that the photos could have been taken more than 100 miles from the pole. Another of the report's assertions, that Peary's accurate steering was plausible because Roald Amundsen had used reached the South Pole in a similar manner, was directly contradicted by evidence that Amundsen had relied on regular observations to determine longitude.

Among polar experts today, the consensus is that Peary got much closer than Cook, but not to the pole. Some suggest Peary gave up the day he took that solitary observation because he realized how far off course he had gone; some suspect he had earlier avoided taking longitude observations so as not to leave a paper trail of his route. (For more on the continuing debate—and for who really reached the pole first—go to nytimes.com/tierneylab.)

Mr. Rawlins and another prominent polar scholar, Robert M. Bryce, doubt that Peary got much closer than 100 miles to the pole. Mr. Bryce, who recently discovered the draft of the Cook telegram that started the controversy, figures that Cook stopped more than 400 miles short.

Mr. Bryce is the author of *Cook & Peary* (1997), an 1,100-page book subtitled, *The Polar Controversy, Resolved*, but Mr. Bryce knows it's not resolved in all minds. Although, some of the loyalists have lost faith

(*The Times* ran a formal correction in 1988, citing Peary's "unreliable" records and his "incredible" speeds), both explorers still have their supporters at the Frederick A. Cook Society, the National Geographic Society and elsewhere.

Mr. Rawlins who is the editor of *Dio*, a science history journal, says he cannot think of any modern scientific fraud that has been so profitable and popular and endured a century.

The only longer-lived example that comes to mind, he says, are the second-century astronomical "observations" of Ptolemy that were apparently derived not from the sky but from his theories.

Ptolemy's tables were used for more than 14 centuries, which seems like a hard record to beat. But with sufficiently motivated reasoning, who knows? In 1909, after Cook's loyalists ignored the evidence of fraud provided by Cook's own traveling companions, the Independent magazine wearily predicted, "There will be a 'Cook party' to the end of time, no matter how strong the evidence brought against him in the future." A century later, there is still a Peary party, too. ❑

Satellites and Submarines Give the Skinny On Sea Ice Thickness

PASADENA, CALIFORNIA, 10 September 2009, by Kathryn Hansen—This summer, a group of scientists and students—as well as a Canadian senator, a writer, and a filmmaker—set out from Resolute Bay, Canada, on the icebreaker *Louis S. St-Laurent*. They were headed through the Northwest Passage, but instead of opening shipping lanes in the ice, they had gathered to open up new lines of thinking on Arctic science.

Among the participants in the shipboard workshop (hosted by Fisheries and Oceans Canada) was Ron Kwok of NASA's Jet Propulsion Laboratory in Pasadena, Calif. Kwok has long provided checkups on the health of Arctic sea ice—the frozen sea water floating within the Arctic Ocean basin. He also knows that some important clues about ice changes can't be seen from a ship.

Extending the record

While satellites provide accurate and expansive coverage of ice in the Arctic Ocean, the records are relatively new. Satellites have only monitored sea ice extent since 1973. NASA's Ice, Cloud and Land Elevation Satellite (ICESat) has been on the task since 2003, allowing researchers to estimate ice thickness as well.

To extend the record, Kwok and Drew Rothrock of the University of Washington, Seattle, recently combined the high spatial coverage from satellites with a longer record from Cold War submarines to piece together a history of ice thickness that spans close to 50 years.

Analysis of the new record shows that since a peak in 1980, sea ice thickness has declined 53 percent. "It's an astonishing number," Kwok said. The study, published online August 6 in Geophysical Research Letters, shows that the current thinning of Arctic sea ice has actually been going on for quite some time.

"A fantastic change is happening on Earth—it's truly one of the biggest changes in environmental conditions on Earth since the end of the ice age," said Tom Wagner, cryosphere program manager at NASA Headquarters. "It's not an easy thing to observe, let alone predict, what might happen next."

Sea ice influences the Arctic's local weather, climate, and ecosystems. It also affects global climate. As sea ice melts, there is less white surface area to reflect sunlight into space. Sunlight is instead absorbed by the ocean and land, raising the overall temperature and fueling further melting. Ice loss puts a damper on the Arctic air conditioner, disrupting global atmospheric and ocean circulation.

To better identify what these changes mean for the future, scientists need a long-term look at past ice behavior. Each year, Arctic ice undergoes changes brought about by the seasons, melting in the summer warmth and refreezing in the cold, dark winter.

> *"The dramatic decrease in multiyear ice coverage is quite remarkable and explains to a large degree the decrease in total ice area and volume,"* — Ron Kwok, NASA Jet Propulsion Laboratory

But climate is not the same as weather. Climate fluctuates subtly over decades and centuries, while weather changes from day to day and by greater extremes.

"We need to understand the long-term trends, rather than the short-term trends that could be easily biased by short-term changes," Kwok said. "Long-term trends are more reliable indicators of how sea ice is changing with the global and regional climate."

That's why a long-term series of data was necessary. "Even decadal changes can be cyclical, but this decline for more than three decades does not appear to be cyclical," Rothrock said.

All the ice counts

Arctic sea ice records have become increasingly comprehensive since the latter half of the 20th century, with records of sea ice anomalies viewed from satellites, ships, and ice charts collected by various countries. Most of that record, kept in the United States by the National Snow and Ice Data Center at the University of Colorado, Boulder, describes the areal extent of sea ice.

But a complete picture of sea ice requires an additional, vertical measurement: thickness. Melting affects more than just ice area; it can also impact ice above and below the waterline. By combining thickness and extent measurements, scientists can better understand how the Arctic ice cover is changing.

Kwok and other researchers used ICESat's Geoscience Laser Altimeter System to estimate the height of sea ice above the ocean surface. Knowing the height, scientists can estimate how much ice is below the surface.

In 2008, Kwok and colleagues used ICESat to produce an ice thickness map over the entire Arctic basin. Then in July 2009, Kwok and colleagues reported that multiyear 'permanent' ice in the Arctic Ocean has thinned by more than 40 percent since 2004. For the first time, thin seasonal ice has overtaken thick older ice as the dominant type.

Submarines and satellites

To put the recent decline in context, Kwok and Rothrock examined the recent five-year record from ICESat in the context of the longer history of ice thickness observed by U.S. Navy submarines.

During the Cold War, the submarines collected upward-looking sonar profiles, for navigation and defense, and converted the information into an estimate of ice thickness. Scientists also gathered profiles during a five-year collaboration between the Navy and academic researchers called the Scientific Ice Expeditions, or "SCICEX," of which Rothrock was a participant. In total, declassified submarine data span nearly five decades-from 1958 to 2000-and cover a study area of more than 1 million square miles, or close to 40 percent of the Arctic Ocean.

Kwok and Rothrock compared the submarine data with the newer ICESat data from the same study area and spanning 2003 to 2007. The combined record shows that ice thickness in winter of 1980 averaged 3.64 meters. By the end of 2007, the average was 1.89 meters.

"The dramatic decrease in multiyear ice coverage is quite remarkable and explains to a large degree the decrease in total ice area and volume," Kwok said.

Rothrock, who has worked extensively with the submarine data, agrees. "This paper shows one of the most compelling signals of global warming with one of the greatest and fastest regional environmental impacts." ❑

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Bird Cam Sees Albatross-Orca Rendezvous

***British Antarctic Survey* (BAS) press release, 7 October 2009**—Scientists from BAS, the National Institute of Polar Research (NIPR) in Tokyo, and Japan's Hokkaido University, have recorded the first observations of an albatross feeding with a killer whale—a strategy albatrosses may adopt for efficiency.

A miniature digital camera was attached to the backs of four black-browed albatrosses breeding at colonies on Bird Island, South Georgia in January 2009. Over 28,000 pictures were taken from cameras on three albatrosses. One camera wasn't retrieved.

Developed by NIPR, the camera is the size of a large lipstick and weighs 82g. It is removed when the albatross returns to its breeding ground after foraging trips. Although the camera slightly changes the aerodynamic shape of the albatross, it didn't affect the breeding success of the study birds.

"These images show us that albatrosses associate with marine mammals in the same way as tropical seabirds often do with tuna. In both cases the prey (usually fish) are directed to the surface and then it's easy hunting for the birds," said BAS's Dr Richard Phillips.

Results are published online this week in the open-access journal *PLoS ONE* from the Public Library of Science. ❑

Albatross-eye view, from a 'lipstick' camera

About Our Centerfold

Wave breaking over bow of ice-strengthened ship Marina Svetaeva, *Ross Sea, 7 February 2009.* Photo © Colin Monteath / Hedgehog House

This dramatic photo—notice the sea surging through the Hawsepipe on the port bow—was taken by New Zealand photographer Colin Monteath using a Canon EOS 5D Mark II; exposure time: 1/1000 second.

Beginning in 1973, Colin has worked in Antarctica for 29 summer seasons so far. From 1973 to 1983, he was Field Operations Officer at Scott Base, helping to coordinate logistic support for New Zealand's science program. Colin was also in charge of the Scott Base huskies and the training of the Kiwi dog handlers. He helped coordinate the recovery operation following the 1979 Air New Zealand crash at Mt. Erebus. Colin acted as a guide for HRH Prince Edward during his Antarctic tour in 1982. In 1978, during his third international science expedition to Mt. Erebus, Colin made the first descent into the volcano's inner crater. Colin has been involved in a number of new routes and first ascents on peaks in the Transantarctic Mountains and, in 1993, became the first New Zealander to reach Antarctica's highest mountain, Vinson Massif.

In 1991, on his first of four seasons in the Arctic, Colin was aboard the Soviet nuclear-powered icebreaker *Sovetskiy Soyuz* which made the first surface vessel traverse of the Arctic Ocean via the North Pole. This voyage was followed by a transit of the Northeast Passage. In 1993, Colin joined an international team that skied and dog sledged across the Greenland icecap. In early 2008, Colin was a member of a four-person international team that crossed Svalbard by ski.

Colin's 21 Himalayan expeditions have also played a central role in his life, and could themselves be the subject of a long story.

Colin's images and feature stories have appeared in many magazines, among them *GEO*, *National Geographic*, *Australian Geographic*, *Terre Sauvage* and *Mother Nature*.

His work also regularly appears in books. He was the principal photographer for the acclaimed Reader's Digest book *Antarctica - Great Stories from the Frozen Continent* (1985); co-author of Smithsonian Institution Press's *Wild Ice - Antarctic Journeys* (1990) and author and photographer of *Antarctica - Beyond the Southern Ocean* (1996). His latest polar book is *Vanishing Wilderness of Antarctica*, due out early in 2010.

With his wife, Betty. he runs the Hedgehog House New Zealand photo library. Founded in 1983, Hedgehog House's specialties include New Zealand's diverse environments, the polar regions, and mountains of the world. See www.hedgehoghouse.com for more amazing and beautiful photography. ❑

Shackleton Loved Scotch—and Left Behind a Stash

***GlobalPost*, CAPE ROYDS, 26 October 2009, by Emily Stone**—If you happen upon the small wooden hut that sits at Cape Royds and wriggled yourself underneath, you'd find a surprise stashed in the foot and a half of space beneath the floorboards. Tucked in the shadows and frozen to the ground are two cases of Scotch whisky left behind 100 years ago by Sir Ernest Shackleton after a failed attempt at the South Pole.

Conservators discovered the wooden cases in January 2006. They were unable to dislodge the crates, but are going in with special tools in January to try to retrieve them. The whisky's condition after a century of freezing and thawing is unknown.

Shackleton brought 25 crates of Scotch with him when he set off on an expedition to the South Pole in 1907. He turned around 97 miles short of his destination, telling his wife, "I thought you'd rather have a live donkey than a dead lion."

When the ship arrived in 1909 to pick the men up, they left their supplies behind in their hut, including reindeer sleeping bags, tins of boiled mutton and bottled gooseberries. And, as we now know, they also abandoned two cases of Charles Mackinlay & Co. whisky.

Al Fastier, a program manager in New Zealand with Antarctic Heritage Trust, was there the day the crates were discovered. The team was clearing out a century's worth of ice that had accumulated under the hut and was causing structural problems.

"It was a very exciting time of actually finding artifacts that possibly hadn't been seen since the historic explorers left," he said.

The group also found felt boots and jugs of linseed oil. The other 5,000 or so artifacts left behind are inside the hut or on the ground nearby.

ANTARCTIC HERITAGE TRUST

"Perhaps we helped him when his other spirits were down..."

In January, the conservationists will use a special drill that chips into the rock so they can pull the crates out and let them melt free in the Antarctic summer sun.

What will century-old, Antarctic-iced Scotch taste like?

Richard Paterson, master blender at Whyte & Mackay, the Glasgow whisky company that now owns the Mackinlay label, is eager to learn of the whisky's fate. He's equally hopeful that he gets to taste some of it.

He has a 1907 letter from Shackleton acknowledging receipt of the cases, along with a photograph of the bottles' label. The company may have donated the cases, which Paterson said cost 28 shillings each, as polar explorers came looking for sponsors for their trips, which were usually run on tight budgets. "Shackleton has been one of my heroes for many years," he said. "It's nice to think that perhaps we helped him when his other spirits were down, that our spirits kicked him up a wee bit."

Paterson said he'd expect that when bottled, the whisky was heavy and peaty, which was the style in that era. He'd like to sample it by sticking a needle through the cork and extracting some of the liquid with a syringe. If the bottles stayed airtight—a big if since the corks may have shifted as they were expanding and contracting with the changes in temperature—the whisky would likely taste much as it did in Shackleton's day, Paterson said.

A whisky's flavor develops as it's aged in barrels because air is able to reach it. Once it's bottled and cut off from external oxygen, it stops changing in taste. If oxygen was sneaking back into the bottles, the whisky would have continued aging and could have started to go bad, much like food that's left out too long.

Even if the bulk of the bottles remain in Antarctica for historic reasons, Paterson is hopeful that a couple can be returned to the company. "It's been laying there lonely and neglected," he said. "Can it not come back to Scotland where it was born?" ❑

Trying to Save the South Pole Station Geodesic Dome

by Charles H. Lagerbom

Efforts are under way to help save the South Pole Station Dome. Erected in 1975, the geodesic dome structure has served the United States Antarctic Program for over thirty years becoming the visual symbol for the station. With a newer South Pole Station having been constructed and gone fully functional in 2008, the fate of the old dome is now in question.

NSF has already agreed to remove the 55-foot structure's top three rings (about 45 triangular panels) and have them eventually installed in a US Navy Seabee museum in Port Hueneme, California. The fate of the geodesic dome's remaining 904 panels, struts and bolts is not so assured and may wind up going to a scrapyard. NSF has currently budgeted $150,000 for its demolition and shipment back to the US, although others estimate the project to cost closer to $500,000.

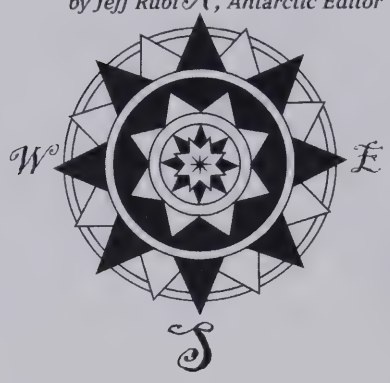
Further threatening the structure's fate is the fact that the NSF has to have the dome removed by March of 2010. That does not leave much time for anyone to raise the additional funds needed. So efforts are under way at various polar organizations to spread the word and see if their memberships might be willing to help raise needed monies for the complete retrieval and preservation of this historic structure. ❑

PHOTO BY BILL SPINDLER

South Pole Station Dome, November 1976. On top, flying below the American flag, is the Bicentennial flag, which was displayed throughout that year.

Due South

by Jeff RubiN, Antarctic Editor



The Royals and the Poles

Herbert Ponting's "Tabular iceberg off Cape Royds, 13 February 1911

The connections between British royalty and polar exploration are many—the royal family has interested itself in the topic since the time of Sir John Franklin and William Bradford—and would make a fascinating topic for someone's thesis someday.

Until that is written, however, an interesting introduction can be gleaned through the exhibition "The Heart of the Great Alone: Scott, Shackleton and Antarctic Photography."

If you happen to be either in Christchurch, New Zealand (from 20 August 2010 to late February 2011 at Canterbury Museum's Robert McDougall Gallery) or Edinburgh, Scotland (from 2 October 2009 to 11 April 2010 at the Queen's Gallery in the Palace of Holyroodhouse, the Queen's official residence in Scotland), you can see the exhibition in person.

Otherwise, you can get a sense of the show from the beautiful accompanying 256-page catalogue (Bloomsbury USA, paperback £19.95, hardback £29.95) of the same title by adventurer David Hempleman-Adams, Sophie Gordon (curator of the Royal Photograph Collection) and Emma Stuart (assistant bibliographer at the Royal Library, Windsor Castle).

This exhibition of Antarctic photography—nearly all from Royal collections—by Herbert George Ponting and Frank Hurley marks the 100th anniversary of Captain Scott's journey to the South Pole. Along with the photographs, most of which are well-known and all of which are stunning, the show includes some fascinating artifacts. Among them are Polar Medals and books from the Royal Library, including an example of Shackleton's *Aurora Australis*, the first book printed in Antarctica.

Without question, however, the most interesting items in the show are two flags.

An introduction to the catalogue by His Royal Highness The Prince Philip, Duke of Edinburgh, describes these flags—and offers an intriguing glimpse of private life within the royal family.

"Years ago," the Prince writes, "I happened to be pottering about the Ballroom at Sandringham, when I came across a large Union flag tucked away in an alcove beside the fireplace. I noticed that there was a silver plate attached to the pole, so I pulled a chair to get high enough to read the inscription. It recorded that the flag had been given by Queen Alexandra to Ernest Shackleton to take with him on his 1914 Antarctic Expedition. As it had been given back, I realized that it must have accompanied the Expedition right through to Elephant Island before coming back to this country and back to the Queen.

> *I realized that [the flag] must have accompanied the [Shackleton] Expedition right through to Elephant Island before coming back to this country and back to the Queen.* — His Royal Highness The Prince Philip, Duke of Edinburgh

"Further investigation of the Ballroom revealed another Union flag in the opposite alcove, with a similar silver plate. This one recorded that it had been given to Captain Scott to take with him on his Antarctic Expedition in 1910. It had similarly been returned when the survivors got back to this country."

Philip also records that following his 1956 trip to the Antarctic Peninsula after opening the 1956 Olympic Games in Melbourne, he was invited to join Britain's Antarctic Club as an honorary member.

When he was invited to the Club's Annual Dinner in 1958, "it occurred to me that the members might like to see these two flags again. At the dinner, they were mounted behind the President's chair, so that they could be seen by all the members."

After dinner, Philip wrote, "an elderly man came up to me and said, 'The last time I saw that flag was on Elephant Island!' " ❑

NASA: Antarctic and Greenland Ice Melt Worsening

***Associated Press*, 23 September 2009**—New satellite information shows that ice sheets in Greenland and western Antarctica continue to shrink faster than scientists thought and in some places are already in runaway melt mode. British scientists for the first time calculated changes in the height of the vulnerable but massive ice sheets and found them especially worse at their edges. That's where warmer water eats away from below.

In some parts of Antarctica, ice sheets have been losing 30 feet a year in thickness since 2003, according to a paper published online Thursday in *Nature*. And the drop in thickness is speeding up. In parts of Antarctica, the yearly rate of thinning from 2003 to 2007 is 50 percent higher than it was from 1995 to 2003.

These new measurements, based on 50 million laser readings from a NASA satellite, confirm what some of the more pessimistic scientists thought: The melting along the crucial edges of the two major ice sheets is accelerating and is in a self-feeding loop. The more the ice melts, the more water surrounds and eats away at the remaining ice.

"To some extent it's a runaway effect. The question is how far will it run?" said the study's lead author, Hamish Pritchard of the British Antarctic Survey. "It's more widespread than we previously thought."

As scientists watch ice shelves retreat or just plain collapse, some thought the problem could slow or be temporary. The latest measurements eliminate "the most optimistic view," said Penn State University professor Richard Alley, who wasn't part of the study.

The research found that 81 of the 111 Greenland glaciers surveyed are thinning at an accelerating, self-feeding pace.

The key problem is not heat in the air, but the water near the ice sheets, Pritchard said. The water is not just warmer but its circulation is also adding to the melt.

"It is alarming," said Jason Box of Ohio State University, who also wasn't part of the study.

Worsening data, including this report, keep proving "that we're underestimating" how sensitive the ice sheets are to changes, he said. ❑

End of An Era: *Kapitan Khlebnikov* to Retire

By John Splettstoesser

PHOTO COURTESY JOHN SPLETTSTOESER

Kapitan Khlebnikov.

The Russian icebreaker *Kapitan Khlebnikov*, familiarly known as simply 'KK,' and chartered by Quark Expeditions from the Far East Shipping Company, Vladivostok, Russia, since 1992, the year of its first cruise with tourists and my first time on the ship, will retire as a carrier for tourists in the 2011-2012 austral summer. Its final cruise will be 6 December 2011 to 5 January 2012, on an itinerary to commemorate the 100th anniversary of the Australasian Antarctic Expedition led by Douglas Mawson.

The ship was my home for virtually every polar cruise itinerary it made, starting with a 65-day voyage from Ulsan, Korea, to St. Petersburg, in 1992-93, which included its first time through the Northwest Passage and the high Canadian Arctic. A 65-day circumnavigation of Antarctica in 1996-97 was the first for a tourist vessel, and the tenth ever for a circumnavigation of that continent (Splettstoesser et al, 1997). A circumnavigation of the Arctic was accomplished soon after (Headland and Splettstoesser, 1999).

A cumulative tally of my many months on board exceeds several years since 1992, and it will be sad to see it return to what it was originally intended for, domestic missions for Russia through the Northeast Passage, or Northern Sea Route.

The ship had many firsts, some of them mentioned, including numerous visits to emperor penguin colonies, beginning in 1992-93, when I saw parts of Australian Antarctica and islands in the Indian Ocean that had never seen tourists in the past. The ship also has been the only one for tourists to visit remote Antarctic research stations such as Halley, Neumeyer, Sanae, Syowa, Molodezhnya, Mirnyy, and several others. Numerous cruises to the Weddell Sea and more emperor penguin colonies followed for several years, some of the colonies never seen previously, along with visits to islands in the South Sandwich group and South Georgia.

The 20-year history of *Khlebnikov*'s travels will be acknowledged by a booklet prepared for passengers in its final voyages, consisting of an article on the role of Russian icebreakers in polar tourism and science, which Bob Headland and I authored and which was presented at a polar conference known as POAC in Sweden in June 2009. The article includes a tabulation of all known passages through the Northwest Passage, beginning with Roald Amundsen in 1903-06, totaling some 133 through the 2009 summer, plus a list of all ships that have reached the North Pole, totaling nearly 80, starting with *Arktika* in 1977 and many others, most of them nuclear-powered, through 2009. ❑

Antarctic Notes

Antarctica Loses Ice From East and West

***Bloomberg*, 23 November 2009, by Alex Morales**—Antarctica is losing ice from its larger eastern side as well as the western part, researchers said. The eastern sheet lost ice at a rate of about 57 billion metric tons a year from 2002 to 2009, contributing to the continent's total annual average loss of about 190 billion tons, scientists at the University of Texas at Austin reported in *Nature Geoscience*. United Nations scientists in 2007 said most of Antarctica's contribution to rising sea levels amid global warming comes from the western sheet, with the eastern part either holding steady or gaining mass. The latest findings for East Antarctica are "surprising" because they differ from other estimates, said glaciologist Jonathan Bamber, who wasn't involved in the study.

Bamber said the margin of error for the latest prediction about East Antarctica—of 52 billion tons—meant the sheet's contribution could still be close to zero.

South Africa's Agulhas to Retire

***Business Day*, 18 November 2009, by Roux Van Zyl**—After 31 years, South Africa's polar research ship *Agulhas* will be retired by 2012, it was announced yesterday as the Department of Environmental Affairs and Tourism signed a deal with Finnish shipbuilder STX Europe to build a 116.25m, US$175 million replacement. The department's Dr Johan Augustyn said the new vessel was crucial for South Africa to maintain its strategic presence in the Southern Ocean and Antarctica and "will be able to break through thicker ice at higher speeds (than *Agulhas*), which will extend our Antarctic season by about a month. It will not cost much more to maintain than *Agulhas* as it has three times as much power while being more fuel-efficient." After delivery of the new vessel in April 2012, *Agulhas* will be sold.

Mysteriously Warm Interglacials

***British Antarctic Survey (BAS) press release*, 17 November 2009**—A new study of Antarctica's past climate reveals that temperatures during the warm periods between ice ages (interglacials) may have been higher than previously thought. The latest analysis of ice core records suggests that Antarctic temperatures may have been up to 6°C warmer than the present day, scientists from BAS, the Open University and University of Bristol report in *Nature* this week. Previous analysis of ice cores has shown that the climate consists of ice ages and warmer interglacial periods roughly every 100,000 years. This new investigation shows temperature 'spikes' within some interglacial periods over the last 340,000 years, suggesting that Antarctic temperature shows great sensitivity to greenhouse gases at levels similar to those found today.

Ancient Penguin DNA Challenges Dating

***Oregon State University press release*, 10 November 2009**—Penguins that died 44,000 years ago have provided frozen DNA samples that challenge the accuracy of traditional genetic aging measurements, and suggest those approaches have been routinely underestimating the age of many specimens by 200% to 600%, researchers report in *Trends in Genetics*. The findings raise doubts about the accuracy of many evolutionary rates based on conventional types of genetic analysis. "In a temperate zone when an animal dies and falls to the ground, their DNA might degrade within a year," said Dee Denver, at Oregon State's Center for Genome Research and Biocomputing. "In Antarctica the same remains are well-preserved for tens of thousands of years."

New *Shirase* Begins Voyage to Antarctica

***Kyodo News*, 11 November 2009**—The 12,500-ton *Shirase*, the country's fourth icebreaker, departed from Harumi Pier in Chuo Ward. The ship is expected to reach the Showa Base in mid-December. The fourth-generation icebreaker carries the same name as the third one. The old Shirase is now anchored at the Maritime Self-Defense Force base in Yokosuka.

Reconstructing Past Climate of Antarctic Peninsula

***National Oceanography Centre, Southampton press release*, 8 November 2009**—The seriousness of current global warming is underlined by a reconstruction of climate at Maxwell Bay in the South Shetlands over approximately the last 14,000 years, which appears to show that the current warming and widespread loss of glacial ice are unprecedented. "At no time during the last 14 thousand years was there a period of climate warming and loss of ice as large and regionally synchronous as that we are now witnessing in the Antarctic Peninsula," says team member Dr Steve Bohaty. The findings, reported in the Geological Society of America Bulletin, are based on a detailed analysis of a nearly complete 108.3m sediment core, the thickest Holocene sediment core yet drilled in the Antarctic Peninsula.

Taiwanese Join China's Antarctica Research

***China Post*, TAIPEI, 12 October 2009**—Three Taiwanese scientists joined a Chinese expedition to Antarctica for the first time Sunday, aboard China's polar research vessel Xuelong, which is also carrying researchers from Australia and Russia.

Remarkably Warm Period in Antarctic History

***Louisiana State University press release*, 1 October 2009, by Ashley Berthelot**—For Sophie Warny, assistant professor of geology and geophysics, years of patience in analyzing Antarctic samples with low fossil recovery finally led to a breakthrough. She and colleagues from around the world now have proof of a sudden, remarkably warm period in Antarctica that occurred about 15.7 million years ago and lasted for a few thousand years. Last year, as Warny was studying samples sent to her from the latest Antarctic Geologic Drilling Program, one sample stood out as a complete anomaly. It showed a 2,000-fold increase in two species of fossil dinoflagellate cysts, a five-fold increase in freshwater algae and up to an 80-fold increase in terrestrial pollen. Said Warny: "Together, these shifts in the microfossil assemblages represent a relatively short period of time during which Antarctica became abruptly much warmer."

Glacier Retreat Creates New CO2 Store

***British Antarctic Survey (BAS) press release*, 9 November 2009**—Phytoplankton are flourishing in areas of open water left exposed by the recent and rapid melting of ice shelves and glaciers around the Antarctic Peninsula. This remarkable colonization is having a beneficial impact on climate change. As the blooms die back phytoplankton sinks to the sea-bed where it can store carbon for thousands or millions of years. BAS scientists report this week in Global Change Biology that this new natural 'sink' is taking an estimated 3.5 million tonnes of carbon (equivalent to 12.8 million tonnes of CO2) from the ocean and atmosphere each year. According to the authors this new bloom is the second largest factor acting against climate change so far discovered on Earth; the largest is new forest growth in the Arctic.

Blue Whales Reclaim Old Feeding Grounds

***The Sunday Times*, 8 November 2009, by Jonathan Leake**—Blue whales are reappearing in parts of the oceans where hunting once wiped them out, signalling that they may be returning from the brink of extinction. Marine scientists have recorded the animals roaming migratory routes and feeding grounds in the Pacific from which they had vanished for much of the past six decades. Research also suggests that the Antarctic population of blue whales may now be growing at 6% a year. "The trend is at last in the right direction," said John Calambokidis, whose research has just been published in Marine Mammal Science. There may be a sinister reason for the failure of whale numbers to recover after the hunting ban was imposed in the 1960s. Files handed to the International Whaling Commission by Alexey Yablokov, environmental adviser to Boris Yeltsin, the Russian president from 1991-9, showed that the Soviet Union illicitly killed more than 9,000 blue whales from the time of the ban until 1972.

New Families of Viruses Found in Antarctic Lakes

***LiveScience*, 5 November 2009, by Rachel Rettner**—Antarctica's icy lakes are home to a surprisingly diverse community of viruses, including some that were previously unidentified. Historically, viruses have been hard to study since many cannot be grown in a laboratory. But new genome sequencing technology allows scientists to identify viruses. "This is changing the way we think about viruses and the role they play in microbial ecosystems," said Antonio Alcami of the Spanish Research Council, who reported results in the Nov. 6 Science from work at Lake Limnopola on Livingston Island in the South Shetlands. Alcami and his colleagues found nearly 10,000 species, including some small DNA viruses that had never before been identified. The team also found the community of viruses changed dramatically depending on the season.

Korea's First Icebreaker Christened

***Korea Times*, 6 November 2009, by Kim Tonghyung**—South Korea unveiled its first icebreaker, *Araon*, a 7,487-ton ship built at a cost of $92 million and capable of travelling 37,000 kilometers for 70 days without resupply. Designed for operation in one-meter-thick ice at 3 knots, *Araon* will leave Incheon on Dec. 19 for three months in the Antarctic. The name *Araon*, which combines 'ara,' ('sea' in the old Korean language), and 'on,' ('all'), was suggested by Kim Myeong-ja, the mother of Jeon, a Korean researcher whose 2003 death while conducting research in a motorboat inspired government efforts to build the ship.

Russia Again Delays Lake Vostok Drill

***Nature.com*, 27 October 2009, by Quirin Schiermeier**—Russia has postponed for another year plans to drill into sub-glacial Lake Vostok. Entry into the uniquely pristine lake 3,750m below the ice sheet is now planned for the 2010-2011 season, Valery Lukin, director of the Russian Antarctic Expedition, told Nature in an email. During the 2008-2009 drilling season the Russian crew made an unsuccessful attempt to recover from the borehole bottom at 3,367 metres a drill that had been damaged during an accident in October 2007. "All attempts to extract the drill have failed," says Lukin. "On 20 January 2009 our drillers have made a decision to change the direction of drilling beginning from a depth of 3,590 metres."

Shy Krill Like the Lights Out

***Australian Broadcasting Corporation*, 26 October 2009**—When it comes to reproduction, krill prefer the lights off, researchers at the Australian Antarctic Division have discovered. They have successfully altered the reproductive cycle of krill; an annual cycle of regression, or shrinkage, followed by maturation, then reproduction. PhD student Matt Brown says early experiments are challenging existing theories. By exposing laboratory specimens to darkness immediately after spawning, the scientists have been able to reset their internal clocks. "We have now figured out that it's not just light that's adjusting the timing of this maturation cycle it's the actual darkness following their spawning period," he said. Krill become sexually mature three months earlier than if they were exposed to natural Antarctic light. Mr Brown says by manipulating the cycle, krill will breed year round.

Gibbs Gets Posthumous Honors

***St. Paul Pioneer Press*, 13 October 2009, by Mary Divine**—The first African-American to set foot on Antarctica—the late George Gibbs, who sailed with Byrd to Antarctica in 1939 (see The Polar Times, January 2007)—has now given his name to Gibbs Point, a rock point that forms the northwest entrance to Gaul Cove, on the northeast of Horseshoe Island in Marguerite Bay. Meanwhile, school officials in Rochester on Sunday dedicated the George W. Gibbs Jr. Elementary School, a new school. Its mascot? The emperor penguin.

Falling Ice Kills South African

***Cape Times*, 7 October 2009, by Melanie Gosling**—Johann Jamneck, 25, senior meteorologist of this year's South African National Antarctic Expedition (SANAE), was killed on Sunday while practicing crevasse rescue techniques with other team members near SANAE's base at Vesleskarvet. Two years ago, he was part of the team that went to Marion Island in the South Atlantic.

New CO2 Data Helps Reveal Antarctica's Formation

***Eurekalert*, 13 September 2009**—The link between declining CO2 levels in the atmosphere and the formation of the Antarctic ice caps some 34 million years ago has been confirmed for the first time. Scientists from Cardiff, Bristol and Texas A&M universities braved the lions and hyenas of East Africa to extract microfossils in samples of rocks which show the level of CO2 in the Earth's atmosphere at the time of the formation of the ice-cap. The study, published in Nature online, confirms that atmospheric CO2 declined during the Eocene/Oligocene climate transition and that the Antarctic ice sheet began to form when CO2 in the atmosphere reached a tipping point of around 760 parts per million (by volume).

How 'Superswarms' of Krill Gather

***BBC News*, 9 October 2009, by Matt Walker**—British Antarctic Survey (BAS) scientists have discovered that huge 'superswarms' containing trillions of krill are formed by juveniles, not adults, and are even denser than previously supposed. That suggests that all krill in the Southern Ocean are more vulnerable to overfishing than previously thought, the scientists warn. The team studied the composition and structure of 4,525 separate krill swarms in the Scotia Sea using echo-sounding equipment. Some krill gather into smaller swarms, no longer than 50m long and up to 4m deep, that are not very tightly packed, with just 10 individual krill per cubic metre, on average. "Superswarms" often stretch over one kilometre in length, and average almost 30m deep. They are much more densely packed, containing up to ten times greater density of animals. That means that the majority of krill living in the Antarctic Ocean at any one time will exist within a few, huge superswarms. When there is not much food around, krill tend to form larger swarms, the researchers said. The small, diffuse swarms are usually formed by adult krill, while superswarms are formed by juvenile krill. A possible explanation could be that swarming together offers individual krill protection against predators such as whales or seals. One mystery to emerge from the research, published in Deep Sea Research I, is that superswarms are more likely to gather at night.

Remarkable Wilson Manuscript Auctioned

***Bonhams.com*, 16 September 2009**—Dr Edward Wilson's first-hand account of 'The Worst Journey in the World,' the story of the Cape Crozier party's journey in the midst of the darkness of the 1911 Antarctic winter, was the star of Bonhams highly-anticipated Exploration & Travel Sale yesterday at New Bond Street, London. The 40-page narrative is thought to be the only manuscript of its calibre relating to the heroic age of Antarctic exploration not now in institutional hands. Complete with detailed pencil sketches, it sold for £132,000. It also included numerous pencilled notes added by Capt. Scott, who, on arriving back, was overheard saying: "But, look here, you know, this is the hardest journey that has ever been made.''

Albatrosses Set Breeding Record

***BBC News*, 2 September 2009, by Matt Walker**—A small group of light-mantled sooty albatrosses have created a colony at Fildes Peninsula on King George Island in the South Shetlands, the southernmost breeding location of any albatross species ever recorded. Researchers reported in Polar Biology that they spotted two confirmed nests on the island, one containing eggs and the other nestlings, and three more possible nests.

Europe Preparing New Icebreaker

***La Prensa Austral*, 18 August 2009**—Europe is preparing *Aurora Borealis*, an icebreaker to be deployed year round in the Arctic, which will liberate *Polarstern* (or its successor, which should be completed by 2015) to work exclusively in the Antarctic, said Heinz Miller of Germany's Alfred Wegener Institute for Polar and Marine Research. *Aurora Borealis*, an icebreaker specially designed in Germany, will be 65% financed with EU funds, with Germany investing 30% plus its operating costs. Thirteen countries are interested in joining the project, and she should be ready to sail by 2016.

Pine Island Glacier Quadruples Speed in a Decade

***The Telegraph*, 14 August 2009, by Aislinn Simpson**—Satellite measurements have revealed that West Antarctica's Pine Island Glacier's surface is dropping up to 16 metres a year, says a new report in Geophysical Research Letters. Since 1994 the glacier has lowered by as much as 90 metres. Fifteen years ago, it was estimated that the rate of melt would see it disappear within 600 years. Now, the data suggests it could be gone in little more than 100.

Ellie Seals Moved Fast With Climate Change

***Discovery News*, 3 August 2009, by Emily Sohn**—Elephant seals traveled surprisingly far when ice retreated from the Victoria Land Coast about 7,500 years ago, according to a new study in PLoS Genetics. That wasn't the only surprise. After the enormous animals arrived, they multiplied remarkably quickly. And when the ice returned a few thousand years later, they high-tailed it out of there. Some even returned to Macquarie Island, about 1,500 miles away, where they had originally come from.

Impending Ship Fuel Ban Squeezes U.S. Program

***Science Magazine*, 6 August 2009, by Jeffrey Mervis**—NSF officials told the National Science Board yesterday that they are trying to figure out how to compensate for the anticipated loss of the tanker USNS *Lawrence H. Gianella* and the cargo ship USNS *American Tern*, used to resupply McMurdo. Both use a heavy grade of fuel oil that the 45 Antarctic Treaty nations agreed in 2005 to ask the International Maritime Organization to ban from being carried or used below 60° South. IMO, of which the U.S. is a member, is expected to approve the ban in March 2010, effective July 2011.

India's New Bharti to Open in 2012

***Times of India*, 6 August 2009, by Arun Ram**—India is set to build a third research centre in Antarctica. The new station, tentatively named Bharti, is scheduled to open by 2012 in the Larsmann Hills. The 30x50 metre station will accommodate 25 people and will use wind and solar power. ❑

Antarctican Society

Charles H. Lagerbom of Northport, Maine is the new president of the Antarctican Society. He brings to the position an avid interest in preserving the history and personal experiences of its members. Overseeing the society's slide scanning service offered free to its members to convert their slides onto a more modern digitized format, he has worked thus far with nearly 10,000 slides. This service coincides with the overall emphasis by the organization to preserve the images, stories, tapes, journals and other materials of its members for posterity. For further information about the society and its scanning service, contact him at clagerbom@sad34.net or visit the Antarctican Society website at www.antarctican.org/ ❑

The Unique and Historic Polar Medal to Cmdr Frank Wild, Veteran of Five Heroic-Age Antarctic Expeditions

by Glenn M. Stein, FRGS (Polar Historian)

Through the kindness of Robert Stephenson, coordinator of the website "The Antarctic Circle," and polar book author Angie Butler, I have been corresponding and speaking with the family of Commander John Robert Frances "Frank" Wild, RNVR, CBE, FRGS (1873–1939).

When his widow died in 1970, Frank Wild's British War Medal and Victory Medal (LIEUT. F. WILD, R.N.V.R.), geographical society medals, British National Antarctic Expedition Sports Medal (FRANK WILD), and a dress miniature Polar Medal with clasps Antarctic 1902–04 & Antarctic 1907–09, along with a quantity of original documentation, were sold at Sotheby's in June 1971. They were last sold at Dix Noonan Webb on Dec. 13, 2007, and are now part of a London physician's collection.

It has been known for many years that Wild's unique Polar Medal with clasps Antarctic 1902–04, Antarctic 1907–09, Antarctic 1912–14 and Antarctic 1914–16, remained with his family in South Africa. The medal was issued officially engraved: A.B. F. WILD. "DISCOVERY". Only two four-clasp Polar Medals have ever been issued, the other being to Ernest Joyce, featuring the clasps Antarctic 1902–04, Antarctic 1907–09, Antarctic 1914–16 and Antarctic 1917. Joyce also received a duplicate medal and both medals are known to exist.

Wild's Commander of the Order of the British Empire (CBE, New Year Honours List, 1920) and dress miniature medals accompany his Polar Medal. The miniatures are mounted for wear: CBE, Polar Medal with 4 clasps, British War Medal, Mercantile Marine War Medal and Victory Medal.

Wild's family sought my advice concerning parting with the medals, since various interested parties in South Africa and the UK have attempted to acquire them over the years. I strongly recommended the best way to preserve Frank Wild's memory and the medals' provenance was to auction them through the leading London firm Dix Noonan Webb (DNW). Consequently, the family has informed me that the CBE, Polar Medal and miniatures will be offered in the rooms of DNW in mid-September 2009.

Photo by F. Hurley

Frank Wild had more Antarctic experience than anyone else during the Heroic Age of Antarctic exploration (1895–1922), participating in five expeditions between 1901 and 1922. Wild's work and leadership were universally respected by his Antarctic comrades, who virtually never had a critical word to say or write about the Skelton, Yorkshire native.

Wild first went to Antarctica as an Able Seaman with Scott during the British National Antarctic Expedition of 1902–04, having had 12 years in the merchant navy before joining the Royal Navy in 1900. He took part in several sledge journeys, including the tragic first attempt to reach Cape Crozier. His spirited leadership brought several men back to the ship after the death of Able Seaman George Vince, who drowned after slipping down a steep ice slope during a blizzard. Scott thought highly of Wild's service and specially mentioned him in dispatches, thus Wild was duly promoted to petty officer. During the expedition, Wild struck up a friendship with the third lieutenant, Ernest Shackleton.

As a member of Shackleton's Nimrod Expedition (1907–09), Wild was placed in charge of provisions, and was one of the four-man sledge party to reach just 97 miles from the South Pole. Fellow Yorkshireman and expedition geologist Douglas Mawson afterwards wrote that his experiences during this time, "acquainted me with Wild's high merits as an explorer and leader." Upon his return, Frank Wild left the Royal Navy by purchase.

Though Scott asked Wild to join his second Antarctic venture, Wild declined, as he felt Scott was "too much the navy man." Instead, he joined Mawson's 1912–14 Australian Antarctic Expedition as a sledging expert and was appointed leader of the Western Base. Under him were seven untried men—none had previously served in the polar regions. In spite of terrible sledging conditions, Wild led successful sledge parties to open up a new region, Queen Mary Land.

Wild then played a vital role as second-in-command of the *Endurance* during the Imperial Trans-Antarctic Expedition of 1914–17. After the ship sank, the men made their way by sledge and boat to land on the desolate Elephant Island. Here, Wild's leadership abilities were tested to the fullest, as he was left in charge while Shackleton went on his epic boat journey to get help on South Geor-

gia. Wild never gave up hope that Shackleton would return to rescue them and whenever the sea ice cleared, he would say, "Roll up your sleeping-bags, boys: the boss may be coming today."

On returning home, Wild volunteered for duty and was made a Temporary Lieutenant, Royal Naval Volunteer Reserve. After a Russian language course, he became the RN transport officer at Archangel, superintending arriving war materials during the Allied Intervention in Russia.

After the war, Wild went to South Africa where he farmed with two former Antarctic comrades. They worked the soil in British Nyasaland until 1921, the beginning of Wild's final Antarctic adventure. They cleared the then virgin forest and planted cotton, and loved the life, though suffering from intermittent bouts of malaria.

From 1921–22, Wild was second-in-command of the Shackleton-Rowett Expedition, a poorly equipped venture, with no clear plan, and a small ship—the Quest. Shackleton died of a heart attack on South Georgia, and Wild took over and completed the journey, combating unfavorable weather to Elephant Island and along the Antarctic coast.

He returned to South Africa to continue to farm. Frank Wild died on Aug. 19, 1939, in Klerksdorp, where he was employed as a storeman at the Bobrasco Mine. He was cremated on the Aug. 23, 1939, in the Braamfontein Cemetery in Johannesburg.

Frank Wild's younger brother was also a polar explorer. Petty Officer Harry Ernest Wild, RN, looked after the stores and dogs of the Ross Sea Party during the Imperial Trans-Antarctic Expedition. Harry Wild died of typhoid in 1918, and in 1923 was posthumously awarded the Albert Medal (Second Class/Land) for the expedition. His Albert Medal, Polar Medal with clasp Antarctic 1914–16 and Italian Messina Earthquake Medal (1908) exist together, while his First World War Memorial Plaque is known in a separate collection. H.E. Wild was also entitled to the Antarctic 1917 clasp, and though sent to brother J.R. Wild in 1921, it was never attached to his Polar Medal. ❑

Glenn M. Stein, FRGS Florida, USA eloasis@earthlink.net

Single medal, opposite: The Polar Medal; Also pictured, the obverse of a variety of other medals awarded to Frank Wild.

Medal Designed by Marty Stein

Two years ago, the Chairman of the International Board of the Antarctic Treaty Summit asked me to design a medal to commemorate this international treaty's first 50 years and the continued use of Antarctica for only peaceful purposes. Over the years, a total of 47 nations have become signatories of this document, unique in human history.

Political and funding obstacles were barely overcome as the medal went through five design changes, eventually being struck in bronze and measuring 2.5 inches in diameter. Early on, I proposed the engraving of consecutive numbering, so each number will relate to a specific recipient (primarily board members, invited guest speakers and sponsors). Only 125 medals were struck, with several to be presented at the Smithsonian Institution during the Summit (November 30–December 3).

Attached are representations of both sides of the medal. The obverse design (at left) is based on the Summit's logo. ❑ *Marty Stein*

SCIENCE AND THE PROGRESS OF ALL MANKIND
ANTARCTICA SHALL CONTINUE FOREVER TO BE USED EXCLUSIVELY FOR PEACEFUL PURPOSES
001
G M STEIN FRGS

OSU Elevates Climate Scientist

Mosley-Thompson named director of polar research

The Columbus Dispatch, by Doug Caruso—Ellen Mosley-Thompson, a prominent climate scientist whose study of ice cores has helped document the rapid rise of greenhouse gases in Earth's atmosphere, will lead Ohio State University's Byrd Polar Research Center.

"These are interesting times," said Mosley Thompson. "With all the emphasis on global climate change, a number of our research teams are on the front lines making crucial observations."

Researchers at the center, located near campus, study the coldest regions of the planet, including the poles and high mountain areas. The lab, among the university's oldest research centers, opened 50 years ago.

Mosley-Thompson is a professor of geography and has worked with the center since she was a graduate student in 1973. As director, she'll continue her work in the field.

She leaves for Antarctica in December with four other Byrd scientists for a two-month expedition to collect ice core samples from Antarctic Peninsula glaciers.

"If you look at the regions on the planet that are warming, it's one of the three centers of greatest warming," she said.

Caroline Whitacre, vice president for research at OSU, said she's happy Mosley-Thompson accepted the appointment.

"She's exactly the right person for the job," Whitacre said. "You need a real dedicated leader in the scientific area to be the director of the center."

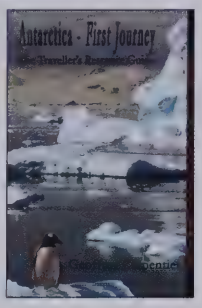
Mosley-Thompson, 61, has led eight expeditions to Antarctica and six to Greenland. She is married to Lonnie Thompson, a world-renowned OSU climatologist.

Whitacre said, "Her name is really nationally and internationally known in this field."

Mosley-Thompson will replace Berry Lyons, who has led the center for eight years. Lyons has been named director of Ohio State's School of Earth Sciences. ❑

BOOK REVIEWS

Antarctica — First Journey



By Geoffrey Carpentier
Hidden Brook Press, 2009, 359pp; C$33.50

Reviewed by Richard Wolak

The most recently published guidebook for Antarctic travel is *Antarctica—First Journey* by Geoffrey Carpentier. The author, a Canadian who has worked in Antarctica as expedition staff, hopes to differentiate his book by providing extensive and detailed information for the novice traveler who is contemplating a first journey to Cape Horn. Early on, Carpentier provides excellent discussions on how to choose among the many ships, trips, activities and itineraries that are currently available. He follows that with detailed commentary on all facets of accomplishing the actual travel—from an excellent packing list and budget considerations, to documentation issues, luggage, financial tips, dietary needs, clothing, insurance and even airport parking. There is a full chapter on travel safety and health issues (from prevention to symptoms to remedies that are both conventional and homeopathic). There is also a primer on geographical, weather and ice terminology to provide the reader with the basic language of the world he will be encountering on his adventure.

The writing style is light and engaging, and the pages of the book are thoroughly interspersed with anecdotal and fun-to-know information, most of it in easily distinguished boxed text (with colored backgrounds). There are nearly 200 of these garnishings that include definitions of obscure terms, shipboard terminology, natural oddities, quotations of note, historical references, personal experiences, "fun faunal facts" and warnings of potential dangers. Their content is reminiscent of the "insider information" typically used by speakers to fascinate their audiences and embellish the main points of their lectures. The author takes a strong environmental stance throughout, including the important guidance for visitors to the Antarctic, as well as a description of the Antarctic Treaty and the protective measures that have been generated by that document.

The listing of sites of interest has nearly 200 entries covering the Peninsula, the South Shetlands and more northerly islands. The site descriptions contain good wildlife, geological and historical information. Based on my own interests, I was happy to see the page that briefly explained latitude and longitude, and the subsequent inclusion of actual coordinates for each of the geographical sites described. Considering the author's target audience, I thought the explanation of the global grid system would have been enhanced by the addition of graphics, and the definition of such basics as the nautical mile and the Antarctic Circle. The maps included in the book are not among its strong points. There are five maps in total; all are very small-scale, gray line drawings on white background. Only the Antarctic Peninsula and South Shetlands are shown on any of them, so despite a myriad of flora, fauna and site entries for South America, the Falklands, South Georgia and the South Orkneys, none of these places is represented graphically in any way. As a result, their geographical relationships or the typical routing of travel among them is not provided.

The section on southern flora and fauna has great geographical range and even includes mention of some Australian and New Zealand wildlife. The wildlife descriptions typically include size, appearance, diet and breeding characteristics, though many of the entries lack the comprehensive illustrations typical of more focused wildlife guides.

In a chapter on Antarctic history, the author provides a chronology of events in the far south for the period 1616 to present. This 15-page list is extensive (with some dubious editing in places) and provides the reader with a broad range of significant names, places and events that supplement the historical information provided in the descriptions of geographical sites. Such chronologies provide a good time perspective, though they tend to fragment many of the rich and exciting narratives of the early explorers.

While much of the peripheral and anecdotal information in the book makes for fascinating reading, at times I wondered at its placement, or inclusion at all, in an Antarctic travel book designed to be a take-along. The Introduction to the book meandered off into methods of finding North or South using a conventional wristwatch, or for fabricating a compass from items that are commonly available. "Before You Go" items and a listing of general travel and safety tips was positioned in Chapter 8 (starting on page 321), despite these same topics being the subject of Chapter 1. After a list of reminders for successful travel back home, a full chapter on "Marine Superstitions" was added at the end of the book. It's great reading, and interesting stuff for the seagoing traveler, but perhaps not so valuable as a reference.

The format of the book at 6x9 inches is a bit larger than many of its competitors. And, at nearly two pounds (870 grams), it's a hefty reference to carry along compared to other of the Antarctic travel or dedicated wildlife guides on the market. (Four such books that I checked were all in the 300-400 gram range.) There is no index, nor are the chapter titles reflected in the pageheads, omissions that make its use as a quick reference less convenient.

Overall, the book's content reaches far and wide, touching on many topics that were quite new to me. Its emphasis on the nitty-gritty of dealing with a broad range of travel issues will serve its audience well. ❑

Body at the Melbourne Club: Bertram Armytage, Antarctica's Forgotten Man

by David Burke.
Wakefield Press, 2009, 224pp, paperback, AUS$27.95

Reviewed by Charles H. Lagerbom

In 1909, and within months of returning to Australia after having been a member of Sir Ernest Shackleton's celebrated expedition of near conquest of the geographic South Pole, Bertram Armytage checked into his favorite gentleman's club in Melbourne, dressed in his finest dinner suit bedecked with his polar medals, comfortably positioned himself on the floor and shot himself in the head.

Body at the Melbourne Club: Bertram Armytage, Antarctica's Forgotten Man by David Burke is a fascinating portrait of one of the lesser known men of Antarctic history. And one who met a tragic end by his own hand. Coming on the heels of Leif Millls' *Men of Ice* and in the same vein as A.G.E. Jones' *Polar Portraits* and L.B. Quartermain's *Antarctica's Forgotten Men*, David Burke has brought another Antarctic veteran out from the shadows of history. Bertram Armytage was one of Shackleton's three Australian members to accompany his 1907–1909 NIMROD expedition where "the Boss" got within 100 miles of the pole. In charge of Manchurian ponies that Shackleton brought along as his main means of transport, Armytage was responsible for their safe delivery to the ice from the storm-tossed decks of the *Nimrod* and on through a stormy Antarctic winter at Shackelton's hut at Cape Royds.

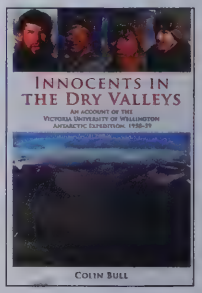
Armytage, one of the older members of the shore party and one of the few also married, was additionally one of the most physically fit. He had rowed for Jesus College at Cambridge and was an expert shot and sportsman. A wealthy scion of Australia's "squattocracy" and a perfect example of the well-to-do gentleman, Armytage had little trouble navigating the higher echelons of aristocratic circles. He was a Boer War veteran and expert horseman. But he seemed to have little focus or purpose, despite his life of wealth and privilege. He was also quiet and prone to moodiness—a potential danger in the confines of a small, dark, drafty hut in an Antarctic winter. Shackleton, showing sound leadership skills, got Armytage through the bleak winter and over the devastating loss of half the expedition's ponies. A testament to his belief in Armytage, Shackleton named him leader of a three-man party to explore the western side of McMurdo Sound, including the Dry Valleys.

Burke does an admirable job fleshing out Armytage's character, especially in light of scarce material. Armytage left no diary of his Antarctic experiences and conducted only one newspaper interview upon his return. More devastating, most of Armytage's existing records and papers were destroyed in a house fire in 1944. So there are few clues regarding his life, his wife and daughter, his post-expedition plans or his state of mind. In his final desperate days, he did attempt to reach out for help and contact his western party colleague, Raymond Priestly, only to find him out of town and unavailable.

In spite of scarce material, Burke perseveres and builds a very readable biography of an interesting yet conflicted man in search of himself. The author also uses his own decades of Antarctic experience to amplify the Antarctic setting, sharing his own experiences upon visiting Shackleton's Hut at Cape Royds or Scott's Discovery Hut at Hut Point during the International Geophysical Year (1957–1958). He also succeeds in reintroducing Armytage to readers of polar history. Like Mills, Jones and Quartermain, the author does us a quite a service by helping shed light on another Antarctic forgotten personality.

The book is available through Wakefield Press (www.wakefieldpress.com.au). ❑

Innocents in the Dry Valleys: An Account of the Victoria University of Wellington Antarctic Expedition, 1958-59



By Colin Bull.
Victoria University Press, 2009, 267 pp, NZ$50

Reviewed by John Splettstoesser

There are two ways to compile an account of a scientific expedition, one being that of Henry W. Menard, author of *Anatomy of an Expedition* (1969), an excellent and readable account of what it is like to launch oceanographic expeditions with a reasonable fat budget involving

ships, many scientists and technicians and sophisticated equipment. But the other way is to enlist four people aged 21, 22, 29 and 30 to explore mostly unknown parts of the Dry Valleys. The title says it all—the 'innocents' were young, uncertain about what they were getting into and, in two cases, undergraduate students who would achieve degrees in geology upon completion of field work, opportunity for which was another unknown in the equation because of the sometimes harsh terrain and weather and short timetable, along with bureaucracy that seemed to occur at every turn of events.

This is not to say that all four were 'innocents,' for the author, Colin Bull—expedition leader, Ph.D. geophysicist and author of *Innocents in the Arctic*, his account of the 1951 Spitsbergen Expedition (2005)—came to the Dry Valleys with previous experience while a student at Birmingham University. The similarity between the two expeditions is several-fold. Both relied on a meager amount of monetary support, reliance on contributions of gear and food, and not very pleasant weather. The Dry Valleys event cost about $1,000 for the two-month project, whereas in modern times, thousands of dollars would be required for a similar venture.

The Dry Valleys provide a convenient laboratory for a host of studies that involved new discoveries from the time first seen, in Scott's Discovery expedition in 1901, and later in 1911–12. Proximity to McMurdo Station and Scott Base has allowed easy access by helicopter to the Dry Valleys every austral summer since the 1950s. Major discoveries awaited the visitors—early glaciations and history of the East Antarctic ice sheet; rock strata that contain coal beds and fossil plants; endolithic organisms surviving in sheltered parts of rocks; ice-covered lakes; and, in later years, thousands of meteorites discovered on the ice sheet west of the Valleys.

This expedition, sponsored by the Victoria University of Wellington (VUW), was the first of many, conducted annually and a forerunner to the founding of the Antarctic Research Centre at the University. In the 1958–59 summer, the four men were based and working primarily in Wright Valley, expanding their research into neighboring valleys to map geology, conduct gravity measurements and make serendipitous discoveries—some 100 mummified seals (all crabeater except for one Weddell) and four mummified Adélie penguins were found inland (animals can also be wayward 'innocents'). Lichens and mosses were sampled. Small invertebrates were collected.

Teams worked in twos. Bull and biologist Dick Barwick worked together, sharing a tent for 52 nights (excepting one), while geology students Peter Webb and Barrie McKelvey trudged over ridges and mountains conducting their field program. Tent-sharing provided the means for an uncommon word to appear in the book—'contubernial,' which means sharing the same tent. The miserable and persistent wind was most unkind, hindering progress. Each member had his own story to tell, individual personalities surfaced (all got along well), and Bull told most of the anecdotes with a superb sense of humor, livening conditions in the field and in the text. McKelvey was identified as a consumer of vast amounts of food (was he a gourmet? … or a gourmand?). Needless to say, food was part of daily conversation, and what is the surprise for dinner? Delicacies such as bacon, chicken and bully-beef seem to head the list.

Dick Barwick flitted about recording the numerous mummified seals (each named 'Sam') and 'bugs' he discovered under rocks. He prided in building cairns, many probably still standing because of their expert construction (see p. 111, Fig. 43, as an example). With the help of Barwick, Bull surveyed everything within sight that would lend itself to detailed maps. The geologists hurried to gather enough information that would result in a thesis, while competition was present in a nearby area—geologists from the New Zealand Geological Survey. All worked out well, as the geologists got their degrees, the valley and vicinity were adequately mapped, and each was rewarded with a feature named for him—Bull Pass, Barwick Valley, Webb Glacier and McKelvey Valley—in addition to the publications that resulted. Pages 243-244 list the many peer-reviewed articles that represent leading-edge work that later researchers followed up on.

The book is well illustrated with 89 figures, many in color, showing details of descriptions in the text, and five maps, including a colored fold-out of Wright and Victoria valleys that shows routes of VUW 1958-59, a very helpful addition to follow the progress of these intrepid investigators in the field. A glossary of terms, list of place names, a conversion table and an index all help with deciphering what appears in the text.

Anyone interested in another book on the Dry Valleys, as well as an expedition that depended on shoestring support and overcoming bureaucratic issues, must read this book.

If you somehow missed acquiring this version, it is in press with University of Alaska Press, estimated for publication in February 2010. The author, this reviewer and others, have discovered perhaps 50 mistakes in the text and photographs, varying from incorrect latitudes marked on the field map, to reversed photographs, to spelling mistakes. A list of these is available from the reviewer at spletts@embarqmail.com ❑

Frozen Earth, The Once and Future Story of Ice Ages

by Doug Macdougall. University of California Press, 2004.

Reviewed by Herbert R. Drury

Here is a very unique history book, quite different from the one on East Greenland by Spencer Apollonio that I reviewed in the last issue of *The Polar Times*. Rather than being an account of exploration and discovery *per se*, this book is a fascinating, highly readable synthesis of the evidence for the world's many ice ages and interglacial periods going back as much as two and a half billion years. I doubt most people realize how many ice ages have occurred, or that there is actually evidence extending so far back in geological time. The Pleistocene Ice Age is relatively well-known these days, but Professor Macdougall succinctly recounts the evidence for many more extensive ones in the pre-historic past. He has done a superb job of searching an immense amount of literature from innumerable sources—some of which one would not normally consider to be relevant—in presenting the many and varied theories on the origins, extent and history of ice ages. Not only does this Emeritus Professor of Earth Sciences at Scripps Institute of Oceanography at the University of California in San Diego give evidence for these theories, he also supplies thoughtful opposing arguments wherever they arise. Thus, the reader may decide for himself just what, or how much, to believe, based upon all the available evidence which the author so well documents.

The book is nicely illustrated with photos of the major figures involved in developing the ice age concept since first proposed in the late 1930s by Louis Agassiz of Switzerland, then subsequently at Harvard University. Also included are several interesting charts, graphs and photos of the classic evidence for different ice ages, and clear explanations from widely diverse sources of how the material shows what apparently happened on earth. The author considers everything—from obvious markings on bedrocks, known as glacial striations, to tree and ice core rings, to lake and ocean floor sediments, to fossils, genetics, meteorology, chemistry and virtually every field of science—to prove his case. There seems to be ample, irrefutable evidence from so many parts of the globe, not just polar regions, that a reader is almost compelled to agree that, indeed, there have been very extensive periods when the world was ice-covered for thousands or even millions of years—many different times, rather than just a few. Though it may seem incredible, there are positive indications of this fact that are discernible with today's technology, and some even without, which tell an undeniable sequence of events that definitely lean to the existence of such glacial periods in the earth's history as far back as more than half the estimated four billion years of Planet Earth's existence.

This amazing book is not only an explanation of the various theories of ice ages and their formation, but it is also a revealing and highly stimulating account of the many people, both scientists and laymen, who developed the theories and the evidence for it, ever since the first public introduction of that idea by Agassiz in 1837. The lives of all these thoughtful researchers and students are of interest in themselves, while the ways in which their ideas added together over many decades have produced a highly regarded and plausible explanation of how and why ice ages have actually occurred, where, when and for approximately how long.

Some of the ways this information has been deduced are truly amazing in themselves and often not a method or source one would normally consider. I, for one, was especially interested in the modern study of ice cores from Greenland, Antarctica and many other places, including smaller glaciers. Someone I knew in college was involved in developing the system of extracting carbon dioxide and other gases from such cores. Concentrations of these materials, including ashes, soot, spores, and other airborne debris, can tell us a great deal about atmospheric and environmental conditions on Earth, going back thousands of years. But other scientific studies of sea or lakebed sediments, rock layers and fossils, among other things one might not expect, tell us about Earth's geological history, reaching many millenia into the past, well beyond ice cores or tree rings.

Many of the causes for ice ages are now well known and understood, but it has taken an immense amount of study, research and theorizing to put all the evidence together, over almost two centuries. Seemingly miniscule astronomical variations in the Earth's orbit over hundreds of thousands of years, plus minor changes in our sun's radiation, seem to be basic causes of global warming and cooling over immense periods of time, but largely within certain predictable limits now detectable by modern technology. Studies not only of the Earth itself, but of our oceans and atmosphere, even the auroras and past minute chemical or biological changes or variations over millions of years, have worked together to create such frigid periods alternating between extended millenia of warm or tropical climates on earth through combinations of these natural processes, plus some others even less obvious perhaps.

So our recently developed and rapid apparent climate changes over the planet are not anything new, by any means. However, the rapidity and severity in which they now seem to be occurring is of great concern because there is no known comparable sequence of such events anytime in the earth's history. Man's part in all of this immediately becomes suspect, and the current or planned meetings of major countries to look for solutions gives hope that something can be done to correct or alleviate a problem that in past climes took many centuries to produce, as Macdougall has so well shown in this fine sum-

CONTINUED ON PAGE 28

Polar Classic

The Northward Course of Empire

By Vilhjalmur Stefánsson, 1922. New York NY: Harcourt, Brace & Co. xxii + 274 pp. with frontispiece, endpiece, illustrations, appendix, bibliography. (Consult online dealers for prices).

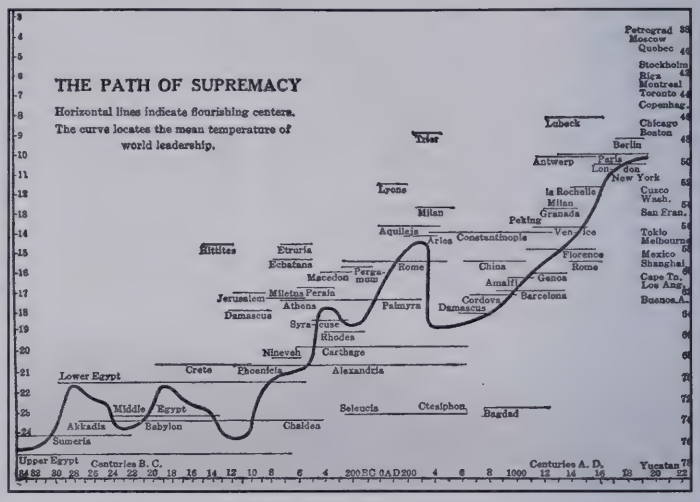
Revisited by Dave Norton.

The author, widely known as "Stef" (1879-1962), generated ardent admirers and detractors, both of which camps attest to his durable influence. Northward Course of Empire is regrettably one of the least remembered of his many contributions to polar discourse.

Readers encounter a banquet of insights into Stef's thinking related to the texture of polar affairs shortly after World War I. Adjust your time-frame: While Stef is writing this book, aircraft have barely begun to impinge upon civilian life. Dominance of the skies remains to be contested between dirigibles (airships) and airplanes. Automobiles and trucks are still insignificant compared to ship and rail for surface transport. Petroleum energy is just beginning to supplant that from coal. *Northward Course of Empire* appeared 88 years ago when searches for Franklin had peaked only 75 years earlier (p. 170) and Darwin's *Origin of Species* had been in print for 63 years. In 1922, the University of Alaska enrolls its first students; Alaska's Naval Petroleum Reserve No. 4 is a year off, the Great Depression seven years away, the founding of *The Polar Times* 12 years, the first Soviet drifting ice station 15 years, the outbreak of WW II still 17 years, and commercial transpolar flights 37 years in the future.

Additional adjustments make the essay more readable. First, adjust to its pace. Stef plods through all evidence bearing on one point for his central assertion—that civilisation is shifting northward in resource dependence, transportation routes, and governance (Fig. 1)—before moving on to his next point. Second, expect archaic usage of key terms. Arctic prairie is what we call "tundra." "Empire," as in Stef's title, is a neutral observation of dominance. Just as "Dominion of Canada" raises no eyebrows today, "empire" and "imperialism" are nonjudgmental terms in 1922. Third, be unsurprised that Stef is well acquainted with polar explorers and scholars of his time. They constitute a small enough coterie that Stef attends most of their presentations, reads all of their publications (e.g., pp. 212-213) and is admirably conversant with history.

Climate is central to his treatise. From analysing Stefánsson's correspondence on polar aviation archived at Dartmouth College, I knew that his fascination with polar meteorology and climates had become almost obsessive by the onset of WW II. This book reveals how early and deeply Stef illustrates the paradigm of "climatic determinism." In his Frontispiece (Fig. 1), temperature is his dependent variable, not the easier option of geographic degrees of latitude. Proponents of this view in mid-20th century argued that like plants and animals, human races, our cultures and productivity are all shaped by adapting to local climatic conditions (See Chapman reference, p. 271).



Its leisurely pace and quaintly neutral words and phrases aside, *Northward Course of Empire* piques interest in the Far North by predicting its pivotal future. If a single maturity of observation punctuates polar history, after which Northern realities prevail over southerners' myths about the North, this book may mark or herald that turning point.

How does Viljalmur Stefánsson rate as a boreal Nostradamus? Rather than tainting other readers' judgments, I note some sections of this book that make especially entertaining and insightful reading. For his thoughts on un-learning boreal nonsense, see Chapter 2, "the North that Never Was" (pp. 20-41); on domesticating muskoxen, see Chapter 6 (pp. 137-167); for predictions on aerial commerce, see Chapter 7 (pp. 168-187); for the roles to be played by submarines, Chapter 7 (pp. 189-199); and for his cartographic view of the Arctic Ocean as a Mediterranean transportation crossroads (endpiece following p. 274).

Noting two salient peculiarities may help readers see this classic as a stage in development of polar thought. First, his demythologizing the North, or in Stefánsson's own unique expression:

"We who are trying to abolish the Arctic are well aware of the difficulty of the task. No one can be familiar with similar enterprises of the past without realizing that in its class this is the most difficult. Take for instance the slow decline and fall of the Great American Desert...." (p. 229).

Second, note that this book predicts northward human advances without invoking global change. For all of Stef's emphasis on high-latitude climates, his treatise remains innocent of the possibility that climates change unidirectionally, either naturally or in response to human influences. As Hulme portrays the subject, "climate change" only became a household phrase after 1988, or 66 years after *Northward Course of Empire* appeared. ❑

"Book Reviews" cont'd

mary of what we know to date. Of course such research as he describes will continue, but it seems clear that it is up to mankind to deal with his conclusions—perhaps the sooner, the better! ❑

The Ice Chronicles, the Quest to Understand Global Climate Change

by Paul Andrew Mayewski and Frank White
University Press of New England, 2002

Reviewed by Herbert R. Drury

Here is an almost perfect companion book to *Frozen Earth* that I review on page 27 of this issue. Published two years prior, the authors chronicle the stupendous feat of drilling 10,018 feet down through the central Greenland ice cap to bedrock during the National Science Foundation's Greenland Ice Sheet Project Two in 1993, of which Mayewski was the leader. But this fascinating volume goes far beyond that formidable event by summarizing the many other ice-coring projects worldwide and the evidence gleaned from them by studying the frozen cores produced. Not only several different gases, but also soot, spores, ashes and debris of various kinds have been extracted from ice cores from the world's glaciers and ice fields. Together, all these bits of material and evidence tell a story of the Earth's atmospheric and climatic changes going back 100,000 years. Thus we are learning where and how the Earth changed over millenia of time, which gives us a basis for determining today's climates in many different locations and how they compare to conditions in both the recent and distant past. Human-caused influences thereby become more evident and tell us how much we may be affecting world climate today.

Formerly of the University of New Hampshire, rofessor Mayewski is now director of the Climate Change Institute of the University of Maine. He is project leader of continuing scientific research into global climate funded by a recent $1.6 million grant from the William M. Keck Foundation of Los Angeles established in 1954. The program is also being supported by the National Science Foundation, NASA, NOAA and several other agencies and collaborating personnel. This internationally acclaimed polar scientist has pioneered such research projects not only in Greenland, but in Antarctica, the mountains and glaciers of Asia, New Zealand and many other parts of the globe. With the help of Frank White, an expert on astronauts and space exploration, the two authors examine the physical scientific evidence for both natural and man-made causes and effects of global climate change which all mankind must now consider. Their book, and that of Dr. Macdougal, comprise a pair of superb references on this whole problem now facing everyone on Earth. The numerous worldwide, regional and local conferences and meetings going on today have resulted from the relatively recent realization that we are obviously affecting world weather and climate through our toxic "greenhouse" gas production and culminated in the multi-nation gathering in Copenhagen, Denmark in December 2009. The goal is to replace the expiring Kyoto Protocol with newer and more effective guidelines and regulations that will hopefully reduce and control our industrial and other production of climate-affecting atmospheric pollution that is now rapidly heating up the planet.

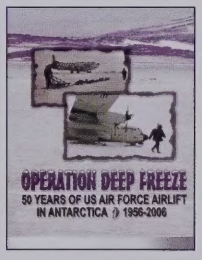
This interesting account of ice studies and the exhausting, traumatic and painstaking efforts required to obtain the evidence to support them, is well described in this publication. The foreword by Lynn Margulis, a noted scientific author and distinguished professor at

the University of Massachusetts, Amherst focuses our attention upon the subtle effects we often unknowingly feel when exposed to different weather and climates as we grow and move about the world. What has caused some of the radical changes experienced over the period of recorded human history is now understood in many instances from the work of these and innumerable other scientists, explorers and theologians, as she explains.

This book teaches us how and why most of these little-known events of the past have occurred, as well as what we may now reasonably expect in the future. It is extremely well illustrated with photos, graphs, charts and diagrams on every concievable aspect of difficult scientific discovery expeditions, exploring climate and the factors that we now know are influencing it, both locally and globally. We are introduced very effectively to the, until now, relatively obscure causes of rapid climate and weather changes that only decades ago were largely unknown or, at best, poorly understood.

We are led inexorably to the realization, as are most national governments, that something needs to be done to curb our own effects upon world weather and climate before it becomes too late to save ourselves from ourselves. That is an earthshaking prospect now urgently facing all mankind. We have such great authors and scientists as these to thank for their tireless efforts to bring this problem to the attention of everyone on our suffering planet. Let's hope they are not too late! ❑

Operation Deep Freeze: 50 Years of U.S. Air Force Airlift in Antarctica 1956-2006



by Ellery D. Wallwork with Kathryn A. Wilcoxson. Scott Air Force Base: Air Mobility Command, 2006. pb, 268 pages, illustrated

Reviewed by Charles H. Lagerbom

When a USAF C-124 named *Miss North Caroline* landed in Antarctica on October 21, 1956, the event marked the start of an involvement with the Antarctic continent that was to span 50 years. This half-century involvement—which included flying more than 5,800 missions and delivering more than 78,900 tons of cargo and 94,500 passengers between New Zealand and Antarctica—is engagingly explored by Ellery D. Walwork.

The large paperback book has many great illustartions of both black-and-white and colored photos. The text is presented in a readable narrative, yet is also chock-full of details, dates, data and people, thus making it a great reference resource. But what I especially enjoyed about the book was the wide range of information and data presented in the appendices, covering everything from different chronologies like animal airlifts and refuelings to statistics on airlift missions and tonnage, personnel deployed and commanders in charge. A helpful acronym list, a short history of Williams Field at McMurdo Station, a gazeteer with addendums and a selected bibliography also help make this an informative and detailed history of the United States Air Force's 50-year involvement in Antarctica.

The book was published by the Office of History, Air Mobility Command, at Scott Air Force Base in Illinois. For more information, please contact the author at ellery.wallwork@amc.af.mil ❑

Obituaries

Peter Barretta

Col. Peter Barretta, Jr., USAF (Ret.), died on 16 November 2009 in Charlottesville, Virginia. He was 89.

A Life Member of the American Polar Society, Pete also served on the APS Board of Governors for a number of years.

Pete had a distinguished military career, serving his country for more than 28 years. He joined the US Army Air Corps shortly after the bombing of Pearl Harbor. He flew 43 combat missions in B-24 bombers and was awarded eight Air Medals. During the Korean War he was recalled to active duty and was stationed in Japan, where he served as a psychological warfare officer writing United Nations radio scripts to encourage North Korean pilots to surrender. During the Vietnam War he served as the director of an intelligence unit special operations group. He was awarded the Bronze Star for his intelligence work.

After the Vietnam War he served at the Pentagon with the newly created Defense Intelligence Agency. During his tenure there he designed the agency logo, which is still in use. Pete retired from the air force in 1970. He went back to school and earned a Master's Degree from George Washington University and taught American History at a northern Virginia high school. He was pursuing a PhD but declining health prevented him from reaching his goal.

Pete and I were both Contributing Editors of *The Polar Times*. Before the Internet we engaged in friendly competition to see who could clip the most polar-related newspaper and magazine articles to submit to the editor for possible publication.

His wife Edna preceded Pete in death. He is survived two sisters, four brothers, and by his four children and his grandchildren. ❑ *by Billy-Ace Baker*

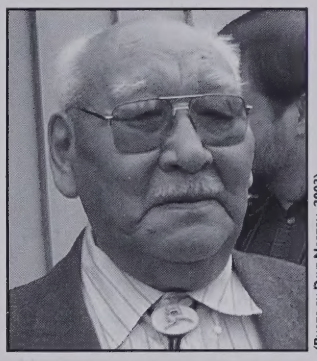
Editor's Note: *For all of our editorial and production staff as well as members of The American Polar Society I want to express our condolences to the family of Colonel Peter Baretta USAF {Ret.}and assure them that we share in their sorrow of his loss.*

Pete, a long time member of APS, was a constant and prolific contributor to The Polar Times through all the years of my editorship and well before. With a lifelong interest in polar affairs, north and south, he was a keen observer of events and provided myself and editors a steady flow of news clips, articles in print and materials from other media sources much of which found its way into each issue of The Polar Times. He will be missed and we salute him for a job well done.

Cliff Bekkedahl, Managing Editor

Dr. Kenneth Toovak

Dr. Kenneth Toovak, Sr., a lifelong resident of Barrow, Alaska, died there in his 88th year on 19th November 2009. Over seven decades, he worked in many capacities in support of sciences, Arctic exploration and his community. Charles D. Brower, who since the 1880s had operated a whaling and trading post at the site of the U.S. contribution to the First International Polar Year (1881-84), noticed young Kenneth's unassuming manner and hard work by 1938, and began entrusting him with tasks of increasing responsibility, despite the fact that Toovak's education was limited to primary grades by obligations to his family.



(Photo by Dave Norton, 2003)

Kenneth worked for Brower's store until signing on to the U.S. Coast and Geodetic Survey in 1945. By then, his skills as a mechanic, shipwright, surveyor, and general problem-solver kept him in high demand. In 1946 he married Thelma Stein. By 1947, he was working for Arctic Contractors, assigned to drilling for oil in the Naval Petroleum Reserve No. 4 ("Pet 4," now known as NPR-A). In the early 1950s, Kenneth was one of several key persons to work for Puget Sound and Drake on the U.S. military's building the Distant Early Warning ("DEW" line) radar sites across northern Alaska.

When Max Brewer of the USGS persuaded the Navy to reserve space at the Barrow field station for year-round support of growing numbers of scientific investigators and their projects in the Arctic, he followed up by incorporating Kenneth Toovak, and several of Toovak's local colleagues, including Joe Ahgeak, Harry Brower, Sr, and Pete Sovalik into the staff of the facility that came to be known as the Naval Arctic Research Laboratory, NARL. Profound trust and friendship between Brewer and Toovak outlasted Brewer's tenure as director of the NARL, which ended in 1971.

Kenneth continued as a leader in community and intercultural collaboration with scientists at NARL under Brewer's successors until 1976, when he undertook oversight for Husky Oil's cleanup of NPR-A. From1979 until the early 1990s, he worked for the North Slope Borough, notably founding its Search and Rescue Department. Retirement hardly slowed Kenneth's pace, as he accepted invitations to serve as Elder's Representative for conferences and advisory boards, including that of the Barrow Arctic Science Consortium. Honors kept pace with invitations. In 1998, the Sigma Xi Research Society recognized his lifetime of achievement. In 2000, Kenneth, along with other notable achievers Col. Norman Vaughan, Wilford Weeks, and Max Brewer were awarded memberships in the American Polar Society. In 2003, the University of Alaska Fairbanks conferred on Kenneth an honorary doctorate for tireless service to scientists.

Even a small sample of his worldwide acquaintances and admirers can recount Kenny's moments of great

and small achievement for hours. Highlights might include his early prospecting expeditions for coal in behalf of Charles Brower; towing transport airplanes back onto runways; moving petroleum storage tanks without damaging them; surviving a plane crash on ice island T-3 near the North Pole; running cat trains upriver over Colville River ice in spring; developing means to penetrate and sample through maximum-thickness sea ice in winter; and numerous successfully concluded search and rescue operations.

Dr. Toovak's achievements illustrate abiding simultaneously by Iñupiaq values and expertise while contributing to scientific understanding. As a veteran of the Alaska Territorial Guard, and member of Presbyterian parish in Barrow, Kenny also bridged among military and civilian, religious and secular communities. His life personifies the generation of Northern Alaska Iñpiat who built their wartime and postwar activities into durable traditions and institutions. ❑

David J. Hofmann

David J. Hofmann, one of the pioneers of stratospheric aerosol and ozone research, died in Boulder, Colo., on 11 August 2009. He was 72.

Hofmann's long and prolific scientific career was, as he would say, simple in concept. Make a long-term commitment to specific measurements, pay attention to the details, and focus on the important issues that the measurements raise — simple in concept, yet challenging to maintain in a world of short-term contracts and budgets.

He sustained and led such programs through 25 years at the University of Wyoming and 17 years in the Climate Monitoring and Diagnostics Laboratory at the National Oceanic and Atmospheric Administration (NOAA/CMDL), which later became the Global Monitoring Division (GMD) of NOAA's Earth System Research Laboratory. Most of the measurement programs he initiated continue today. He retired in 2007.

In 1971, he and colleague Jim Rosen began making regular balloon-borne measurements of the size distribution of stratospheric aerosol. Together they initiated the first regular measurements of stratospheric aerosol since these particles were first measured a decade earlier. He and his colleagues also sampled the aerosol layer at other locations, ranging from nearly pole to pole.

Soon after the Antarctic ozone hole was reported, Hofmann drew on his ballooning expertise and polar experience to develop better instruments. He and his group deployed to McMurdo station in 1986, where their measurements were instrumental in establishing the important link between ozone loss and heterogeneous chemistry on polar stratospheric cloud particles.

Hofmann loved going to Antarctica. Over a period of 30 years, he traveled to the continent 19 times, as a leader of University of Wyoming research teams, and as director of NOAA's facilities at the South Pole Station. His polar experience was put to good use through service on the U.S. Arctic Research Commission (1991-1994), the National Academy of Sciences Polar Research Board (1999-2001), and the advisory committee to the Office of Polar Programs at the National Science Foundation (2000-2002). ❑

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APS Member Statistics for 2009

New APS Members for 2009

Dianne Jamerson Decker (Black Mountain, NC)
Edwin Hamblin (Chesapeake, VA)
Arthur Lindberg (Toms River, NJ)
Cyril Buehler (Laguna Woods, CA)
Rose, David (Suffern, NY)
Brown, Arthur J. (Washington, DC)
Fischer, Frederick D. (Chicago, IL)
Headland, R.K. (UNITED KINGDOM)
New York Public Library (New York, NY)
Lamont Doherty Earth Observatory Geosciences Library (Palisades, NY)
Boyer, Peter (AUSTRALIA)
Freeman, Paul (Phoenix, AZ)
Peterson, Shawn (Healy, AK)
Amagansett Free Library (Amagansett, NY)
Kennedy, David (Olympia, WA)
McGraw, Molly (Hammond, LA)
The Nantucket Atheneum (Nantucket, MA)
Mr and Mrs John Gallagher (Sherborn, MA)
Mr and Mrs Kevin Fraser-Corp (Acton, MA)
Wiles, Richard (Riverside, PA)
Parkinson, Claire (Greenbelt, MD)
Borns, Hal (Orono, ME)
Borgmann, Howard (Broomfield, CO)
Case, Gerry (Broomfield, CO)
Leidy, Oz (Broomfield, CO)
Perry, Dennis and Susan (CANADA)
Teal, John A. (Burlington, VT)
Salzman, Hal (Boxborough, MA)
Jackson County Libraries (Medford, OR)
Phillips Exeter Academy (Exeter, NH)
The Hawken School (Gates Mills, OH)
The Hawaii Prepatory Academy (Kamuela, HI)
Leone, Jackie (SOUTH AFRICA)
Spero, Lon (Elk Grove, CA)
Garcia-Lavigne, Diana (Wilder, VT)
Schumm, Harold E. (Syracuse, NY)
Lewander, Lisbeth (SWEDEN)
Perry Iowa Library (Perry, IA)
Lagerbom, Ann (Tucson, AZ)
Kapaun, Lee and Ray (Morganton, GA)
Lyons Public Library (Lyons, KS)
Alma Public Library (Alma, WI)
New York Public Library (New York, NY)
Kenny Lake Public Library (Copper Center, AK)
The Lewes Public Library (Lewes, DE)
The Rehoboth Beach Public Library (Rehoboth Beach, DE)
Duncan, R. Scot (Birmingham, AL)
Leinmiller, Mark (Atlanta, GA)
Pope, Benjamin J. (Cambridge, MA)
Sugarman, Louis P. (Farmington Hills, MI)
Hobbie, John E. (Falmouth, MA)
Serials, MBL-WHOI Library (Woods Hole, MA)
Peterson, Robert (Coolsping, PA)
Ross, Chet (Southworth, WA)
McGaughey, Jeanne (Freeburg, IL)
Robinson, Mr + Mrs Bill (Scottsdale, AZ)
Hufford, Jean (Tucson, AZ)
Lagerbom, Jack (Columbia, MO)
Weiss, Danny (Lawai, HI)

2009 New Life Members

Dianne Jamerson Decker
John S. Madaras Jr.

Deceased Members*

Capt. William R. Anderson
Col. Peter Barretta
William Burnham
Daniel H. Dennison
Gray W. Hampton, Jr.
David J. Hofmann
Dr. Jerri Nielson
Capt. A.L. Raithel, US (Ret)
Edith "Jackie" Ronne
Don Renz
Dr. Kenneth Toovak

*APS members or others in the polar community who have passed away about whom the membership center has been notified

Membership Letter

Hello from the coast of Maine. The weather is turning colder, fall is falling away and winter will soon be upon us here in northern New England. That means it is renewal time for APS members whose membership is set to expire at the end of December. Last month, we sent out over 350 renewal notices and, as of this writing, we have received almost two hundred responses. That is encouraging since this is the first renewal notice at the new $25-per-year membership rate. A few of our members have passed away this year, and only a handful of members have chosen not to renew. So our membership roster remains strong.

We have also been hearing from some members (particularly those overseas) that mail delivery of *The Polar Times* is sporadic or worse. The APS membership center works to ensure that all members receive their issues in a timely manner, but we do ask that you communicate with us also in a timely manner. To hear from a member who says they have not received an issue in over two years is not helpful, especially when we try to replace any missing issues. As a general rule of thumb, if you have not received the January issue by the end of February, contact us. If you have not received the July issue by the end of August, contact us. Please do not wait too long since we do not keep many back issues on hand.

As always, I appreciate the timely renewals and address change updates. I also really enjoy hearing from our many members around the country and world. Please contact the membership center at the email or regular mail address below if you have any questions, comments or concerns. I consider it an honor to be your membership chair. Thank you for your time.

Charles H. Lagerbom

Membership Chair
American Polar Society
PO Box 300 Searsport • Maine 04974 USA
aps@bluestreakme.com

Secretary's Letter

We have enjoyed over three years of great leadership from current APS president John Behrendt, but all good things must come to an end. The plan is to hold an election this coming early fall with the mailing of bios and ballots in the July issue of *The Polar Times*. This now presents the opportunity for anyone in the membership to throw their name into the hat and, of course, this applies to anyone currently serving as an officer or on the Board of Governors.

With the APS feeling the reality of the tough economic times, the new president will need to work creatively with officers and members to lead the APS into a new era that will allow us to continue to provide the publication we all enjoy and possibly become involved in other endeavors as well.

I encourage anyone who is interested and has questions regarding the position to contact either John or myself via email, and we will get you the information you need. That said, I would like to have in hand, by the first week of May, the names of all who wish to be listed on the ballot. Please provide bios and include a statement of why you are the best choice for the President position. The ballot will go out with the July edition of *The Polar Times*.

Feel free to contact us regarding this election. I look forward to talking to the possible next president of the APS. (Sorry, no Oval Office or Secret Service provided!)

Best Regards,

Kevin Bjella

Secretary, APS

APS Meeting in Boulder in 2010

The American Polar Society meeting will be held in Boulder, Colorado, May 12–14, 2010. It will be co-hosted by the Institute of Arctic and Alpine Research (INSTAAR) and the National Snow and Ice Data Center (NSIDC) at the University of Colorado (CU). The program presentations will be in the CIRES Auditorium on May 13–14. Convenors are John Behrendt, President APS and INSTAAR; Ted Scambos, NSIDC; Tad Pfeffer, INSTAAR; and Jim White, Director, INSTAAR. There will be a reception on Wednesday evening, May 12, and a banquet on the evening of May 14.

The tentative theme of the meeting is "Ice and Climate Change at the Poles: Personal Accounts and Satellite Evidence." The convenors will arrange the program speakers along the general line of the theme, though not restrictively. Suggestions to the president are welcome.

There are no excess funds available except registration fees for participants, unless someone donates. ❑

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Major Contributors This Issue

Billy-Ace Baker • Abel Shafer • Peter Anderson •

About Our Back Cover

The "toy" ship, Natalia, *beached at the Ushkani islands.* ❑ **Photo by Scott Hoffman**

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